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STEEL

ESTABLISHED 1882

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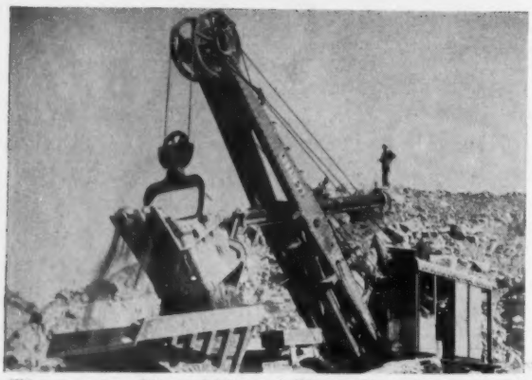
PRODUCTION • PROCESSING • DISTRIBUTION • USE

AIRCO Flame Hardening a Taper Roller. Variable speed motor with speed reducer provides the correct peripheral speeds. Photo courtesy, Thew Shovel Company, Lorain, Ohio.

now 28 ~~27~~ parts of Thew Power Shovels are AIRCO FLAME HARDENED!



The outstanding ability of Thew Shovels to stand up on jobs like this is convincing proof of the effectiveness of AIRCO FLAME HARDENING.

IN 1936 the Thew Shovel Co. with the cooperation of AIRCO Field Service Engineers, made the first application of flame hardening to power shovel parts.

Results were so satisfactory that the process has since been applied to a long list of parts including spur and bevel gears, roller pads, brackets, brake bands, spindles, clutch jaws, etc.

Latest addition to the list are the taper rollers which carry the swinging parts of the shovel. In applying flame hardening to these rollers a set-up had to be devised that would give the right peripheral speed for the different diameters. Cooperation of AIRCO Field Service Engineers was again invited—and the problem was readily solved with AIRCO Flame Hardening Equipment.

AIRCO OXYACETYLENE FLAME HARDENING is no longer on trial. The experience of the Thew Shovel Co., and many other manufacturers, has definitely shown that it not only produces better hardening results, but also cuts down costs. If hardening plays a part in your manufacturing, it will pay you to investigate. AIRCO, pioneer in developing the process and necessary equipment, will be glad to give you full details. As a first step, write for the FLAME HARDENING BULLETIN.

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STEEL
PRODUCTION • PROCESSING • DISTRIBUTION • USE

As the Editor Views the News

■ NINE STEEL companies, representing 74 per cent of the industry, report total net profits of only $1,818,766 during 1938 (p. 15), compared with $181,011,624 in 1937. But this record is much better than expected in view of the adverse conditions of last year. It shows that the steel industry has been able to reduce its production costs still further. Fourth quarter earnings indicate that the profit-loss "break-even" point for the major companies is an operating rate somewhere between 40 and 45 per cent of ingot capacity. . . . Another notable feat in the steel industry takes the form of more stable employment. Although steel output (p. 17) dropped 14 per cent in December, employment in steel plants fell off only one-fourth of one per cent.

♦ ♦ ♦

Considering Business

The trend at Washington is more encouraging to business. Congressional criticism of the Wagner act and the national labor relations board (p. 25) is growing. "Feelers" from the department of commerce deal with ideas as to how business may be stimulated. The department's business advisory council is understood to be preparing a report to show how the undistributed profits tax prevents business recovery. . . . A bill introduced in the house would prohibit exports of pig iron and scrap to China or Japan. Another bill provides for installation of new machine tools and other equipment required for the national defense. Another proposal is that the provisions of the Walsh-Healey act be applied to all government purchases coming to more than $2000.

♦ ♦ ♦

Economists First

The temporary national economic committee (p. 19) will consider the steel industry Feb. 24-28, inclusive; only investigators and economists will be heard. Later, if the industry so desires, it will be given opportunity to testify . . . . Effective date of the minimum steel wages under the Walsh-Healey act has been set as March 1. . . . New windowless plant at Fitchburg, Mass., will be operated (p. 33) with controlled air, light, heat, humidity and sound. . . . Research committee of the Engineering Foundation (p. 17) will carry out a $100,000 welding research program in 1939. . . . Steel production moved up 1½ points last week (p. 19) to 53 per cent of ingot capacity; semi-finished stocks are accumulating in some cases. . . . Further good buying by the railroads (p. 69) was a factor in the market last week.

♦ ♦ ♦

Decorating Stainless

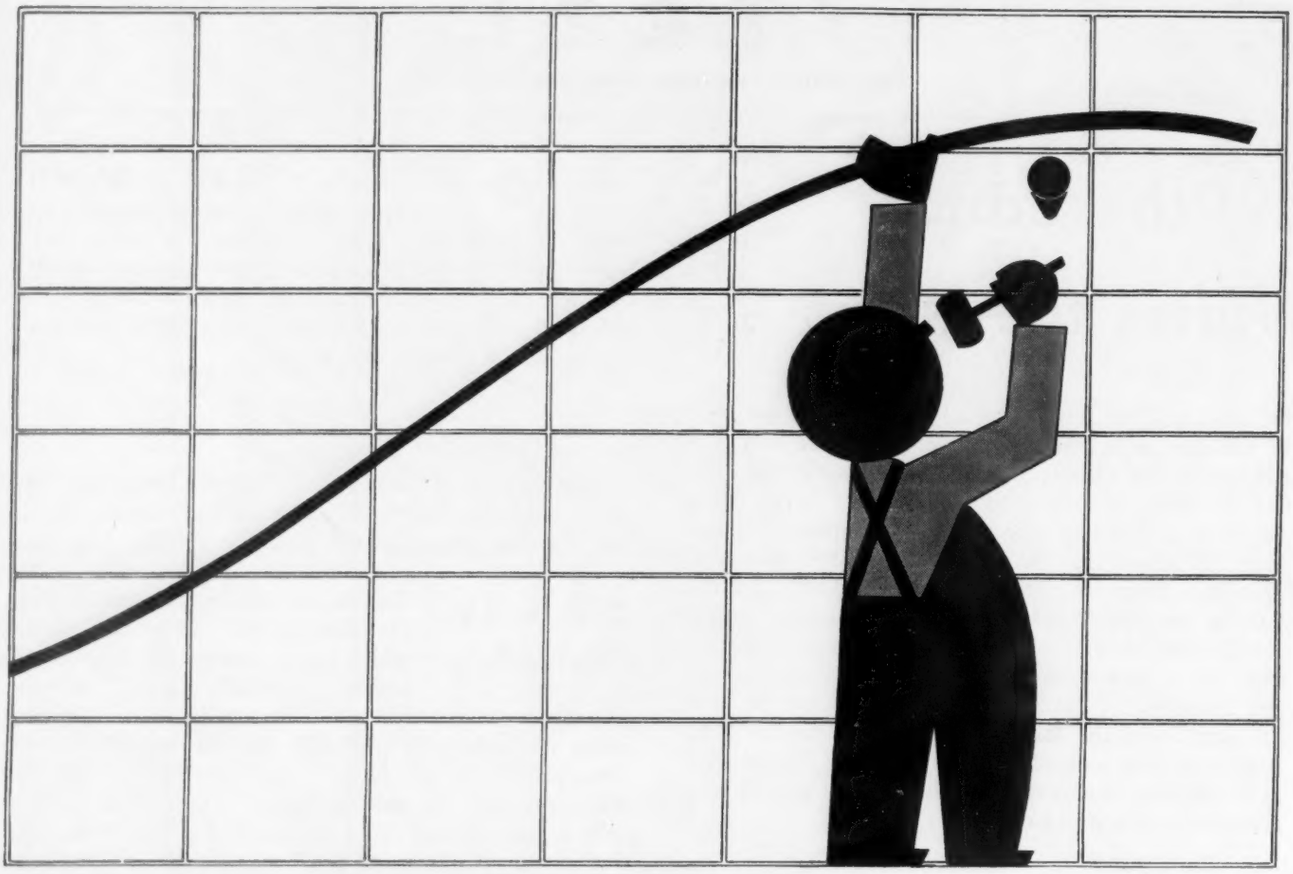
Many of our 10,000,000 unemployed never will be rehabilitated, is the opinion (p. 38) of one observer. He stresses the importance of the worker training and "retraining" programs, including the case-work method for re-establishment of individuals, which have been set up in a number of industries. . . . To enable its customers to find a wider market for stainless steel products, one producer (p. 40) has developed economical methods for placing decorative designs on such products in any quantity. Purpose is to enhance the beauty of this metal by breaking the monotony of its shiny surface. . . . Better heating practice is cited by two competent authorities (p. 44) as having improved the quality of rolled products; they discuss correct design of soaking pits and reheating furnaces.

♦ ♦ ♦

Bent Plates, Tool Beds

A high-lift platform is useful for carrying men and tools to positions in tall structures (p. 47) which otherwise are difficult of access. . . . For heat treating parts for farm and garden tools (p. 50) one manufacturer has installed a new, automatic combination of hardening, quenching and drawing units which has effected a reduction in both fuel and labor costs. . . . A well-known engineer (p. 54) has developed a method of designing machine tool beds and other plate products in which a single bent plate is substituted for a combination of welded flat plates. Fabricating time is reduced sharply and appearance and strength of the product are improved. . . . A new type of concealed door hinge, formed of heavy-gage steel (p. 66) now is offered to the automobile industry.

E C Kreutzberg



Are You Pegging for Bigger Profits?

Check the opportunities

You will want the greatest possible value for your dollars that go into steel. You will want the right steel for each purpose.

✔ For example many manufacturers are now obtaining 25% or more weight reduction without loss of structural strength by using Inland Hi-Steel.

✔ Others are adding 300% to 500% longer life when exposed to atmospheric corrosion by using Inland Copper-Alloy which costs but little more per ton than ordinary steel.

✔ Increasing numbers of shops are using Inland Ledloy, the new lead-bearing steel—which permits 30% to more than 100% increased machining speeds.

✔ If you use sheets or strip the right analysis combined with proper heat treatment, finish and uniformity will increase the speed to your forming operations.

Inland men will gladly check these economy possibilities with you. And their personal interest in serving you may result in some excellent methods of lifting your product-appeal or lowering your costs in order to peg profits higher during the coming year.

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SHEETS STRIP TIN PLATE BARS PLATES FLOOR PLATES STRUCTURALS PILING RAILS TRACK ACCESSORIES REINFORCING BARS

Year's Total Profit for 74 Per Cent of Steel Industry $1,818,000

■ FIRST nine steel producers to issue financial reports for 1938, representing 51,706,232 tons of ingot capacity, or 74 per cent of the industry's total, had an aggregate net profit of only $1,818,766, compared with $181,011,624 net profit reported by the identical producers in 1937.

These figures do not necessarily indicate a 1938 profit for the industry as a whole. Several important producers, which have not yet reported for fourth quarter, accumulated sizeable deficits for the first three quarters. Fourth period earnings are unlikely to be large enough to offset losses for the first nine months.

Ingot operations last year averaged 39.8 per cent of capacity, down 45 per cent from the 1937 average of 72.4 per cent.

The national steel rate averaged 40.8 per cent in the third quarter of 1938, but rose to 55.8 per cent in the final quarter. Each of the nine producers which have reported was able to record a net profit during the fourth quarter, while in the September quarter three of the nine were in the red.

Net profit of these nine producers totaled $13,466,467 in the fourth quarter, compared with a net loss of $5,308,318 in the preceding period. The total exceeded by a slim margin the $13,364,032 profit reported in the fourth quarter of 1937, when ingot operations averaged 40.7 per cent.

Indicated average profit per ton of ingot capacity for the nine producers last year was $0.035, against an average net profit of $3.55 during 1937. Estimated individual profit per ton, based on each company's ingot capacity was also down sharply. Keystone Steel & Wire Co. had the best showing with $2.92. Continental Steel Corp. was second with $2.25, followed by Inland Steel Co., with $2.10. Three of the group recorded a loss.

Further comparisons:

	1938	1937
Keystone Steel & Wire Co.	$2.92	$4.31
Continental Steel Corp.	2.25	2.91
Inland Steel Co.	2.10	5.41
National Steel Corp.	1.96	5.24
Bethlehem Steel Corp.	0.52	3.40
Youngstown Sheet & Tube Co.	0.21*	3.91
United States Steel Corp.	0.30*	3.68
Republic Steel Corp.	1.24*	1.40
Rustless Iron & Steel Corp.†	2.31	20.37
For all	0.035	3.55

*Loss. †Stainless steel ingots.

SLIGHT PROFIT FOR U. S. STEEL AT 44.6% OPERATIONS

United States Steel Corp. reports net income for fourth quarter 1938 was $4,394,454, against losses in the first three quarters. For the year net deficit was $7,755,914, contrasting with net earnings of $94,944,358 in 1937.

Directors declared the regular quarterly dividend of $1.75 on preferred stock, payable Feb. 20 to record Feb. 3.

Corporation's profit, while insufficient to cover the dividend on preferred stock, reflects the higher demand for steel products in the final period last year.

Measured by finished steel shipments, its operations were:

	Tons Shipped	Per Cent of Capacity
First quarter	1,565,244	35.3
Second quarter	1,445,110	32.0
Third quarter	1,577,870	34.6
Fourth quarter	2,037,144	44.6
Total for year	6,625,368	36.6
Total for 1937	12,748,354	71.1

Although shipments in the fourth quarter showed an increase of 459,274 tons, or 29 per cent over the third quarter, the total for the full year dropped to about one-half the 1937 total, a decline of 6,122,986 tons or 48 per cent. Only in three depression years in the last decade were shipments lower than in 1938.

For the first four weeks in January this year, shipments averaged 47 per cent of capacity, compared with 32 per cent a year ago.

Total net working assets before deducting current dividend declara-

Steel Producers' Financial Statements Summarized

	Fourth Quarter 1938	Third Quarter 1938	Fourth Quarter 1937	Year, 1938	Year, 1937	Ingot Capacity gross tons
United States Steel Corp.	$4,394,454	$5,847,791*	$4,077,983	$7,755,914*	$94,944,358	25,790,000
Bethlehem Steel Corp.	3,658,160	446,866	4,253,375	5,250,239	31,819,596	10,042,000
Republic Steel Corp.	308,613	2,387,556*	247,323*	7,997,825*	9,044,148	6,453,000
Youngstown Sheet & Tube Co.	90,108	726,546*	1,696,022	658,933*	12,190,649	3,120,000
National Steel Corp.	2,753,156	1,813,997	2,580,925	6,661,651	17,801,893	3,400,000
Inland Steel Co.	1,759,785	1,098,245	867,571	4,916,203	12,665,317	2,340,000
Continental Steel Corp.	228,000	192,360	21,041	631,660	814,553	280,000
Keystone Steel & Wire Co.§	115,728	83,124	32,226	‡690,575	‡1,017,971	236,232
Rustless Iron & Steel Corp.	158,463	18,983	82,212	81,110	713,139	†35,000
Totals	$13,466,467	$5,308,318*	$13,364,032	$1,818,766	$181,011,624	51,706,232
FINISHING CAPACITY ONLY						
Acme Steel Co.	$202,726	$110,007	$171,341*	$375,872	$1,898,904	.....
PIG IRON CAPACITY ONLY						
Virginia Iron, Coal & Coke Co.	22,847*	44,771*	12,119*	157,891*	91,175*	200,000

*Loss. †Stainless steel ingots. ‡Based on quarterly reports. §Fiscal year ends June 30.

tion but reflecting the proceeds from sale of $100,000,000 debenture bonds in June, and payment of bank loans of $50,000,000 originally made in February were, at Dec. 31, $439,873,943, compared with $372,388,530 on Dec. 31, 1937, and $391,330,566 on Dec. 31, 1936.

"Capital outlays," says the corporation's statement, "continue to be limited to those necessary in completing the plant improvement and modernization program inaugurated early in 1937, and for other general betterments necessary for the proper and efficient maintenance of facilities."

Net expenditures in 1938 for additions and improvements, less credit for properties sold, were approximately $66,800,000. About $5,500,000 of capital obligations maturing or retirable by sinking funds were paid. Jan. 1 unexpended balance on approved appropriations for property additions and betterments was approximately $22,000,000.

Average number of employes in 1938 was 202,108, compared with 261,293 in 1937, a decrease of 22.7 per cent. Last year's payrolls totaled $282,209,332, against $442,927,683 in 1937, a decrease of 36.3 per cent. Average hourly earnings increased 4.4 per cent, from 86.4 cents in 1937 to 90.2 cents in 1938.

NATIONAL STEEL

National Steel Corp. reports net earnings, after all charges, including depreciation and depletion, interest and federal taxes, for the final quarter of 1938 as $2,753,156, equal to $1.25 per share on 2,198,767 shares of outstanding capital stock. This compares with $1,813,997, equal to 84 cents a share earned in the preceding quarter.

For 1938, earnings were $6,661,651, equal to $3.03 per share, compared with earnings of $17,801,892, equal to $8.21 per share, in 1937.

REPUBLIC STEEL

Republic Steel Corp., Cleveland, reports net income of $308,613 for the fourth quarter last year, against a net loss of $2,387,556 in the previous quarter and a deficit of $247,323 in the final 1937 period. Net loss for the year 1938, after all charges, amounted to $7,997,825, compared with $9,044,148 net profit for 1937. Provision for depreciation and depletion for 1938 amounted to $10,897,019 compared to $10,756,485 in the previous year.

YOUNGSTOWN SHEET & TUBE

Youngstown Sheet & Tube Co. had a net loss of $658,933 in 1938, compared with net profit of $12,190,649 in 1937, and $10,564,510 profit in 1936. The indicated profit for the fourth quarter was $90,108, against a net loss of $726,546 in the third quarter, and $1,696,022 profit in the last quarter of 1937.

INLAND STEEL

For 12 months ended Dec. 31 Inland Steel Co. reports net profit of $4,916,203, after all charges, equal to $3.12 per share on 1,577,005 shares of capital stock. A net of $12,665,317, or $8.05 per share on 1,573,950 shares of capital stock, was reported for 1937. The fourth quarter profit was $1,759,785, against $1,098,245 profit in the September quarter, and $867,571 in the fourth quarter of 1937.

Directors declared a dividend of 50 cents a share, payable March 1 to record Feb. 14. Similar dividends were paid in each of the preceding three quarters.

ARMCO PASSES PREFERRED

Directors of American Rolling Mill Co., Middletown, O., failed to declare a dividend, due April 15, on the 4½ per cent cumulative convertible preferred stock. The November payment was also omitted on preferred, bringing arrears to date to $2.25 per share.

Monopoly "Witch Hunt" Will Not Help Recovery

■ "Examples of unrecognized monopolistic practices are to be found everywhere. They are accepted as a necessary attribute to free enterprise," said A. W. Robertson, chairman of Westinghouse Electric & Mfg. Co., in a recent radio debate with Thurman Arnold, assistant attorney general of the United States.

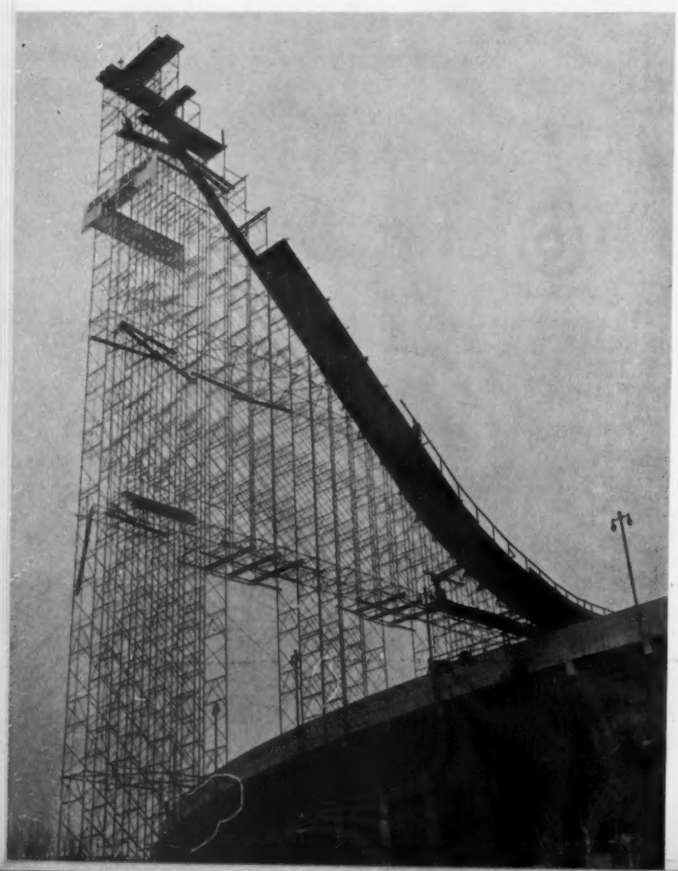
Patents and copyrights are monopolies created by law. Mr. Robertson estimated such accepted monopolies account for at least 15 to 20 per cent of our total annual income. Government-created monopolies affecting prices would bring this figure to at least 25 per cent, he said.

"It is evident that we do not hate monopoly when it isn't called such, or when it isn't thought of as such, or when it is small and homey," he continued. "The fact is, monopoly is just at present the 'popular devil' and is really no more evil than competition. Both have the power to destroy if unrestricted.

"Anything which enables an individual or a group of individuals to corner a necessary commodity or service unlawfully and forces the public to pay an unreasonable price is wrong, and has always been so considered by English-speaking peoples," he concluded. "The theory that this type of monopoly should be restrained was a part of our common law before the enactment of the Sherman anti-trust law.

"But it won't help the present situation to make the antimonopoly drive a witch hunt. Monopoly is fast becoming a political catch-word that covers all our ills, when actually we should look elsewhere for the cure."

■ Domestic electric refrigerator sales for 1938 totaled 1,191,627 units, according to the National Electric Manufacturers' association, New York. The report covers 17 manufacturers and compares with 2,203,335 units in 1937.



Miles of Pipe For Los Angeles Ski Jump

■ **Steel pipe was used to construct this 185-foot ski jump, comparable to a 14-story building, in the Los Angeles Coliseum. A battery of artificial snow machines will cover the slide and the stadium infield. Soibelman photo**

Steel Employment, Payrolls, Production

		Ingot Output Gross Tons	Number of Employes	Total Payrolls	Average Hourly Wages	Average Hours Per Week
1937	Jan.	4,718,436	548,000	$76,423,000	72.0	40.5
	Feb.	4,414,699	556,000	74,278,000	72.2	42.5
	March	5,218,326	577,000	90,863,000	78.8	42.5
	April	5,070,867	589,000	94,322,000	85.6	41.3
	May	5,151,909	595,000	92,931,000	86.0	38.6
	June	4,184,723	556,000	87,520,000	87.0	39.2
	July	4,556,304	594,000	90,550,000	86.2	37.3
	Aug.	4,877,826	603,000	92,663,000	85.4	37.9
	Sept.	4,289,507	603,000	86,161,000	83.7	36.8
	Oct.	3,392,924	587,000	76,191,000	82.5	31.9
	Nov.	2,254,365	551,000	62,119,000	81.5	27.6
	Dec.	1,473,021	508,000	52,062,000	81.7	23.4
1938	Jan.	1,732,764	475,000	47,578,000	80.5	22.9
	Feb.	1,703,726	461,000	45,599,000	81.3	24.9
	March	2,012,406	455,000	51,386,000	81.8	26.7
	April	1,925,166	445,000	47,809,000	82.6	25.6
	May	1,806,805	436,000	46,757,000	83.6	24.4
	June	1,638,277	425,000	46,706,000	84.5	25.6
	July	1,982,058	424,000	45,802,000	84.8	24.3
	Aug.	2,546,988	427,000	52,712,000	83.2	29.4
	Sept.	2,657,748	431,000	52,365,000	83.0	30.0
	Oct.	3,117,934	436,000	56,176,000	83.2	31.2
	Nov.	3,572,220	450,000	61,054,000	83.5	34.2
	Dec.	3,143,169	449,000	59,254,000	83.5	32.0

Year's Steel Payrolls, $613,199,000, Off 37%, With Output Down 44%

■ STEEL employment and payrolls in December were slightly lower than in November, reflecting the decline in production. Although output dropped 14 per cent, employment fell only one-fourth of 1 per cent, from 450,000 to 449,000 employes, according to the American Iron and Steel institute. Total payrolls were 3 per cent lower, $59,254,000 in December against $61,054,000 in November. December, 1937, payrolls were $52,062,000.

Average weekly earnings also declined due to the shorter work week. Average hours per week in December were 32, compared with 34.2 in November. Indicated average weekly wage for December was $26.72, compared with $28.56 in November. December average weekly earnings, however, were the highest for any month, excepting November, since September, 1937, when they were $31.02. Average hourly rates in December were unchanged at 83.5 cents.

December figures brought steel payrolls to a total of $613,199,000 for the year, a decline of 37 per cent from the record total of $976,000,000 for 1937. Steel output in 1938 was 44 per cent below 1937. Average number of employes in 1938 was 443,000, or 23 per cent below the record 1937 average of 572,000.

WEIRTON HEARING ENDS AFTER 17½ MONTHS

Testimony in the national labor relations board's hearing on charges brought by the Steel Workers Organizing committee against the Weirton Steel Co. was concluded in Pittsburgh last week. Seventeen and one-half months had elapsed since the hearing started Aug. 16, 1937, in New Cumberland, W. Va.

Some 40,000 pages of testimony and several thousand exhibits were sent to Washington where the labor board will review the record for a decision.

SWOC charged the company with fostering independent unions and conspiring to discourage SWOC. Before adjournment, Trial Examiner James C. Batten announced he would prepare written decisions on a number of motions to dismiss the complaint.

EMPLOYES INCREASED, BUT MAN-HOURS REDUCED

In 63 metalworking firms in the Pittsburgh district a total of 5,014,412 man-hours were worked in December, 375,000 hours less than in November and 980,000 hours less than in October, according to the Pittsburgh Employers' association. Number of men employed however, increased to 34,335, highest of the year. This represented 69.3 per cent of total normal payroll.

General Refractories Acquires Portsmouth

■ General Refractories Co., Philadelphia, has acquired Portsmouth Refractories Co., Portsmouth, O., which will provide it with a broader scope of products and give it an outlet for its products to consumers in the Ohio valley. Purchase price was not revealed, although it is stated officially no outside financing was necessary. The Portsmouth company eventually will be dissolved, plants to be operated as units of General Refractories.

$100,000 For Welding Study

■ A $100,000 program of welding research will be carried out in 1939 by the welding research committee of the Engineering Foundation. The research is co-ordinated by the committee in co-operation with leading scientific talent in the field, according to William Spraragen, technical secretary. More than 70 individual projects are in progress in universities throughout the nation.

Importance of the study is reflected in the new shipbuilding and armament program which will depend in part on welding in ship construction, pipe lines, aircraft, tanks and other machines of war, it is pointed out. Test data for determining design values in building codes are being obtained by groups working under the committee.

Investigations now being conducted at the University of Illinois are determining the number of cycles of repeated stresses which various types of joints can withstand under loads. The new light-weight, high-strength alloy steels present problems to welding engineers.

Influences Steel Analyses

Findings of research, in turn, influence the steelmaker in so proportioning the alloys in steels that they may be welded readily. In some instances this involves use of stabilizing elements, such as columbium or titanium, in others, holding carbon content as low as possible. Techniques of relieving stresses set up by welding operations become imperative in some structures subject to dynamic stresses, such as machinery and pressure vessels, it is stated.

Comfort A. Adams, consulting engineer, Edward G. Budd Mfg. Co., Philadelphia, is chairman of the committee.

Goodyear Rubber Marks Vulcanization Centenary

■ Goodyear Tire & Rubber Co., Akron, O., will celebrate the centennial of vulcanization and the company's fortieth anniversary by a homecoming, Feb. 20-23. About 2000 sales representatives of the mechanical goods division, from all parts of the world, will be present. A statue of Charles Goodyear, discoverer of vulcanization, will be unveiled in front of Akron city hall. An exhibit of rubber products and historical materials will be shown in Goodyear Hall and a civic dinner for 1600 persons will be provided by Akron chamber of commerce.

January Iron Production Declines 1.3 Per Cent; Active Stacks Up 3

■ ALTHOUGH blast furnace operations improved in January, the gain was not sufficient to push production of coke pig iron above the December output. The difference in totals was not great, however. Active stacks on Jan. 31 numbered 118, compared with 115 on Dec. 31.

Daily average output of pig iron in the United States during January amounted to 70,448 gross tons, 930 tons, or 1.3 per cent, below the December, 1938, rate of 71,378 tons daily. This was the lowest daily average since October, 1938, with 66,694 tons. Production for January, a year ago, averaged 46,608 tons.

Total production in January was 2,183,895 gross tons, a loss of 28,823 tons, or 1.3 per cent, compared with December total of 2,212,718 tons. Since both months were of equal length, daily and total production figures were directly comparable. January showed the lowest monthly output since October when 2,067,499 tons were produced. Production for January, 1938, amounted to 1,444,862 tons.

MONTHLY IRON PRODUCTION

Gross Tons

	1939	1938	1937
Jan.	2,183,895	1,444,862	3,219,741
Feb.	.....	1,306,333	3,020,006
March	.....	1,470,211	3,470,470
April	.....	1,388,008	3,400,636
May	.....	1,260,937	3,545,180
June	.....	1,060,747	3,115,302
July	.....	1,213,076	3,501,359
Aug.	.....	1,495,514	3,616,954
Sept.	.....	1,683,097	3,417,960
Oct.	.....	2,067,499	2,891,026
Nov.	.....	2,286,661	2,007,031
Dec.	.....	2,212,718	1,503,474
Total	2,183,895	18,889,663	36,709,139

Relating production to capacity, operations in January averaged 50.8 per cent. This was the lowest since October with 48 per cent. Rate for December was 51.4 per cent; November, 55 per cent, the high point during 1938. Operations in January, a year ago, were at a rate of 33.6 per cent.

Of the 8 stacks added in January, 2 were merchant furnaces and 6 were steelworks units. There were 5 steelworks stacks blown out or banked during this period. Thus the net gain was 2 in merchant class and 1 in the steelworks group, a gain of 3 units for the month. Total of 118 operating at end of January compared with 115 in December, 121 for November, 114 for October.

Furnaces resuming during January were: In Ohio: Youngstown No. 5, Republic Steel Corp. In Pennsylvania: Shenango No. 1, Shenango Furnace Co.; Bethlehem G, Bethlehem Steel Co.; Clairton No. 1 and Edgar Thomson I, Carnegie-Illinois Steel Co. In New York: One Buffalo, National Steel Corp. In Indiana: Madeline No. 5, Inland Steel Co.; Gary No. 11, Carnegie-Illinois Steel Corp.

AVERAGE DAILY PRODUCTION

Gross Tons

	1939	1938	1937	1936
Jan.	70,448	46,608	103,863	65,461
Feb.	.....	46,655	107,857	63,411
March	.....	47,426	111,951	66,004
April	.....	46,267	113,354	80,316
May	.....	40,675	114,360	85,795
June	.....	35,358	103,843	86,551
July	.....	39,131	112,947	83,735
Aug.	.....	48,242	116,676	87,475
Sept.	.....	56,103	113,932	90,942
Oct.	.....	66,694	93,259	96,509
Nov.	.....	76,222	66,901	98,331
Dec.	.....	71,378	48,499	100,813
Ave.	70,448	51,752	100,573	83,832

Stacks blown out or banked were: In Ohio: River No. 3, Republic Steel Corp.; Trumbull-Cliffs, Trumbull-Cliffs Furnace Co. In Pennsylvania: Bethlehem D, Bethlehem Steel Co. In Illinois: South Works Old No. 2, Carnegie-Illinois Steel Corp. In Indiana: Gary No. 4, Carnegie-Illinois Steel Corp.

Inland Steel Co. lighted its new Madeline No. 5 blast furnace at Indiana Harbor, Ind., Jan. 3 (STEEL, Jan. 9, p. 15). Blowing in of this stack, which has a daily capacity of 1000 tons, raises the total number of furnaces in the United States from 236 to 237, and in Indiana from 18 to 19.

JANUARY IRON PRODUCTION

	No. in blast last day of Jan.	Dec.	Total tonnage Merchant	Non-merchant
Ohio	29	30	70,717	455,559
Penna.	31	28	47,343*	497,898*
Alabama	16	16	88,765	164,198
Illinois	8	9	36,214	154,680
New York	10	9	59,487	105,270
Colorado	1	1		
Indiana	9	2	12,236*	322,814
Maryland	4	4		
Virginia	1	1		
Kentucky	1	1		
Mass.	0	0		
Tenn.	0	0		
Utah	1	1	0	168,714
West Va.	2	2		
Michigan	4	4		
Minnesota	1	1		
Missouri	0	0		
Total	118	115	314,762*	1,869,133*

*Includes ferro and spiegeleisen.

Mining Congress Urges Federal Budget "Ceiling"

■ American Mining Congress called for repeal of the remaining portion of the undistributed profits tax and for re-establishment of the flat-rate tax on corporate incomes at its annual meeting in Washington last week.

The group further recommended creation of a committee on the budget in each house of congress which would be empowered to study the annual executive budget and make recommendations for determination of a maximum amount of expenditures for the year, to which all appropriations must conform. Such a ceiling over expenditures, it was contended, would make effective control by congress over both taxation and appropriations.

The congress also favored: Currency with a metallic base, as opposed to managed currency; restoration of private ownership of gold, and avoidance of further additions to gold stocks by government; simplification of SEC regulations and establishment of a mining division; no more government competition with private business; national labor relations act amendment; senate ratification of all reciprocal trade agreements; inclusion in national defense plans of provisions for an adequate supply of strategic and critical war material.

Officers re-elected: President, Howard I Young, president, American Zinc, Lead & Smelting Co., St. Louis; vice presidents, D. D. Moffat, vice president, Utah Copper Co., Salt Lake City, E. B. Greene, president, Cleveland-Cliffs Iron Co., Cleveland, and D. A. Callahan, Wallace, Idaho; secretary, Julian D. Conover, Washington.

RATE OF OPERATION

(Relation of Production to Capacity)

	1939[1]	1938[1]	1937[2]	1936[3]
Jan.	50.8	33.6	76.6	48.2
Feb.	....	33.6	79.5	46.4
March	....	34.2	82.5	48.5
April	....	33.4	83.7	59.1
May	....	29.4	84.3	63.1
June	....	25.5	76.6	63.6
July	....	28.2	82.9	61.5
Aug.	....	34.8	85.7	64.3
Sept.	....	40.5	83.7	66.9
Oct.	....	48.0	68.4	71.0
Nov.	....	55.0	49.3	72.3
Dec.	....	51.4	35.6	74.2

[1] Based on capacity of 50,606,400 gross tons, Dec. 31, 1937; [2] first half on capacity of 49,512,737 tons, Dec. 31, 1936—second half on capacity of 49,727,737 tons, June 30, 1937; [3] capacity of 49,777,893 tons, Dec. 31, 1935. Capacities by American Iron and Steel Institute.

Steel Inquiry Slated for Feb. 24

WASHINGTON

■ UNLESS there is a change in present plans, the steel industry will be taken up by the temporary national economic committee on Feb. 24, 25, 27 and 28. So far as can be learned the discussion on those days will be by economists and investigators for the federal trade commission.

It is understood representatives of the industry will be given an opportunity to be heard later, although no arrangements have been made for their appearance.

The steel study will be followed by a discussion of the farm machinery situation.

Hearings are to be resumed Feb. 6 with insurance companies as the subject.

William O. Douglas, chairman, securities and exchange commission, reported to the committee that the life insurance investigators have met with the fullest co-operation from officials of life insurance companies.

The insurance hearing will last about two weeks, after which the committee will hear a report from the federal trade commission. The committee last week discussed its preliminary report, soon to be released.

Canada Produced Less Steel, Iron in 1938

■ Canada produced 1,155,995 tons of steel ingots and castings in 1938, compared with 1,402,882 tons in 1937. December output was 78,614 tons, against 90,120 tons in November and 98,334 tons in December, 1937.

Pig iron in 1938 totaled 705,099 tons; in 1937 it was 898,855 tons. December output was 53,381 tons, November, 46,216, and December, 1937, 81,032 tons. Ferroalloys declined from 82,072 tons in 1937 to 53,322 tons in 1938. December ferroalloy total was 2810 tons, November, 5999 tons, December, 1937, 5846 tons.

Steel Portrayed in Film As Basic in Recovery

■ In the "March of Time," entitled "State of the Nation—1939," moviegoers will see on the screen the significance of increased steel production, the industry's contribution to national re-employment and the importance of its peak wage level.

The film deals with the nation's renewed feeling of security and confidence in national recovery, and records upturn in steel as a basic factor behind this optimistic outlook. Pictures were taken in mills in Pittsburg, Calif., and Detroit; and to portray re-employment, in Pittsburg.

District Steel Rates

Percentage of Ingot Capacity Engaged In Leading Districts

	Week ended Feb. 4	Change	Same week 1938	Same week 1937
Pittsburgh ...	46	None	32	82
Chicago	48.5	+ 3	25	78
Eastern Pa...	34	None	30	53.5
Youngstown..	42	— 3	26	81
Wheeling	64	None	44	77
Cleveland ...	64	+ 4	33	75.5
Buffalo	39.5	— 4.5	14	85
Birmingham..	80	+ 3	63	79
New England.	70	None	20	74
Cincinnati ...	55	+ 3	44	22
St. Louis.....	48.5	+ 8.5	29	82
Detroit	92	+ 4	47	90
Average....	53	+ 1.5	31	79.5

Milcor Steel Opens Baltimore Branch

■ Milcor Steel Co., subsidiary of Inland Steel Co., has established a branch plant and warehouse at Fayette and Oldham streets, Baltimore, to be opened formally March 1. The company's complete line of fireproof building material and sheet metal building products will be carried.

R. S. Schmieder has been appointed branch manager. Mr. Schmieder has been engaged in the development and sale of Milcor material for more than 25 years. In 1919 he was named manager of metal ceiling department and since 1935 has been assistant manager of the metal lath and specialties division at the Milwaukee office.

R. S. Schmieder

PRODUCTION

■ STEELWORKS operations last week advanced in six producing centers, declined in two and were unchanged in four. The national operating rate is estimated at 53 per cent, 1.5 points above the preceding week.

Youngstown, O.—Down 3 points to 42 per cent with indications for the same rate this week. Possible resumption at Brier Hill would give an increase of 3 points.

Cincinnati—Advanced 3 points to 55 per cent, with the same rate scheduled this week.

St. Louis—Increased 8.5 points to 48.5 per cent as four open hearths were added, one producer going to capacity. More open hearths are to be lighted early this month.

Birmingham, Ala.—Lighting of its sixth open hearth by Republic Steel Corp. advanced the rate 3 points to 80 per cent, 18 open hearths being active in this district.

Chicago—Gained 3 points to 48.5 per cent, the first upturn since Jan. 1. A leading producer advanced its schedule 4 points and a smaller independent 6 points.

Detroit—Rose 4 points to 92 per cent on addition of an open hearth at the Ford mill, practical capacity. Great Lakes continues with 14 furnaces active out of 16.

New England—Unchanged at 70 per cent for the fourth week.

Pittsburgh—Continued at 46 per cent, with possibility of slightly lower schedules for this week.

Wheeling—Held at 64 per cent, unchanged since Jan. 1. Some mills are running full.

Buffalo—Down 4.5 points to 39.5 per cent. Addition of an open hearth by one interest and dropping of three by another contributed to this result.

Cleveland—Up 4 points to 64 per cent on enlarged production by two interests. Indications are for a slight increase this week.

Central eastern seaboard—Steady at 34 per cent with no change indicated this week.

Coke Production in 1938 Down 37.6 Per Cent

■ By-product and beehive coke production in 1938 totaled 32,661,392 net tons, compared with 52,375,500 tons in 1937, a loss of 37.6 per cent, according to the bureau of mines.

By-product coke output was 31,795,892 tons, 35.5 per cent less than 49,210,800 tons in 1937. Beehive production was 865,500 tons, 72.7 per cent less than 3,164,700 tons in 1937. Production in both grades showed substantial increase in November and December after a moderate, steady rise beginning in June.

MEN OF INDUSTRY

■ W. A. HUBER has been appointed manager of sales, Gilmore wire rope division, Jones & Laughlin Steel Corp., Pittsburgh. He has been with Jones & Laughlin since 1936, and before that had been engaged in public accounting and sales work for a number of years.

♦

C. Hascal Bliss has resigned as vice president, Nash-Kelvinator Corp., Kenosha, Wis.

♦

Fenton B. Turck Jr. has resigned as vice president, American Radiator & Standard Sanitary Corp., New York.

♦

S. Wiley Wakeman, a vice president, Bethlehem Steel Corp., New York, and in charge of Bethlehem's shipbuilding activities since 1926, has been elected a director.

♦

John G. Andrews, formerly with Boston Bridge Works Inc., Cambridge, Mass., is now affiliated with Bethlehem Fabricators Inc., Bethlehem, Pa., at the Boston office.

♦

A. R. Herske has resigned as vice president and general manager of sales, American Radiator Co., New York, a post he has filled the past five years.

♦

W. J. Senger, identified in various capacities with the Van Dorn Iron Works Co., Cleveland, for 11 years, has been appointed manager of sales.

♦

W. G. Retzlaff, associated with the Fruehauf Trailer Co., Detroit, since 1923, recently as wholesale manager, has become assistant general manager.

♦

Walter E. Ellsworth, formerly with Illinois-Iowa Power Co., Champaign, Ill., has joined Claud S. Gordon Co., Chicago, in both a sales and engineering capacity.

♦

Thomas R. Martin, formerly an equipment engineer with Arthur G. McKee & Co., Cleveland, is now assistant chief engineer and assistant production manager for Sawyer-Massey Ltd., Hamilton, Ont., machinery builder. Graduate of Carnegie Tech, Mr. Martin was at one time assistant chief engineer for Republic Steel Corp.

♦

L. E. Peck has been appointed Midwest district sales manager for

W. A. Huber

Lake Erie Engineering Corp., Buffalo, manufacturer of hydraulic presses, with headquarters at 1540 East Fifty-third street, Chicago.

♦

Eugene A. Lindemann has been elected president, A. J. Lindemann & Hoverson Co., Milwaukee, continuing to act as treasurer and general manager. He succeeds his brother, A. L. Lindemann, resigned. Walter C. Lindemann has been elected vice president and secretary, and A. T. Fish, vice president.

♦

Donald B. Mason, chemical engineer, has been appointed technical director, Freeport Sulphur Co., New York, a position entailing responsibility for co-ordinating the various research activities of the company.

A. C. Dyer

Who has been appointed sales manager, Electric Controller & Mfg. Co., Cleveland, effective March 1, as noted in STEEL, Jan. 30, page 22. He formerly worked in the electrical departments of West Penn Steel Co. and Allegheny Steel Co. at Brackenridge, Pa., and the Homestead steelworks of Carnegie-Illinois Steel Corp., Munhall, Pa., before joining Electric Controller in 1913

♦

William Katzer, formerly superintendent, Gar Wood body plants, and more recently superintendent, Michigan Tank & Furnace Corp., has been named manager of sales, Welding Equipment & Supply Co., in the Ohio territory, with headquarters at Columbus, O.

♦

Keith C. Bowers, heretofore in the St. Louis office of Revere Copper & Brass Inc., Dallas division, Chicago, has been appointed sales representative in western Missouri and Kansas, with headquarters at 325 Ward Parkway, Kansas City, Mo.

♦

C. W. Franz, graduate of Phillips Exeter academy and Sheffield Scientific School of Yale, has joined the sales staff of Acheson Colloids Corp., succeeding T. P. Hunt. He will do sales development work in the Illinois territory, with headquarters at 330 North Michigan avenue, Chicago.

♦

Andrew G. Spielgelhalter, Wilmington, Del., has been elected president, Pusey & Jones Corp., builder of ships and paper machinery. He succeeds J. P. Pulliam, of Milwaukee, who has been elected chairman of the board. Mr. Spielgelhalter formerly was vice president and general manager.

♦

Prof. Frank B. Rowley, director, engineering experiment station, University of Minnesota, was awarded the American Society of Heating and Ventilating Engineer's medal for "distinguished scientific achievement in heating, ventilating and air conditioning" at the forty-fifth annual meeting of the society in Pittsburgh, Jan. 25.

♦

R. H. Zeilman and A. J. Gillespie have been appointed chief engineer and assistant chief engineer, respectively, Thew Shovel Co., Lorain, O. Simultaneously with these appointments, the Cleveland branch of the Thew Shovel engineering department has been moved to Lorain, where a building is being constructed to house the new consolidated engineering department.

♦

William H. Fogarty, who has spent 27 of his 30 years with Johns-Manville Corp. in its Chicago office, has been transferred from the Chicago district managership of the power products department to assistant to the vice president, Johns-Manville Sales Corp. He will continue to make his headquarters in Chicago. Corydon H. Hall, the past three

years assistant sales manager in Johns-Manville's New York power products district, succeeds Mr. Fogarty as district manager.

♦

Robert J. Nelson, Arcade Malleable Iron Co., Worcester, Mass., has been elected president, New England Foundrymen's association. Other officers are: Vice president, Francis Le Baron, E. L. Le Baron Foundry Co., Brockton, Mass.; treasurer, Arthur W. Gibby, Gibby Foundry Co., East Boston; secretary, Ernest F. Stockwell, Barbour & Stockwell Co., Cambridge, Mass.

♦

H. L. Edsall, secretary and director of public relations, G. S. Rogers & Co., Chicago, has resigned from the board of directors. The company specializes in processing materials for the automotive and machine-building trades. Mr. Edsall was one of the co-founders of the company, and his resignation is understood to have been due to a change in merchandising policy.

♦

Rex E. DeLong, formerly northwest sales manager, E. F. Houghton & Co., has been placed in charge of the newly created processing materials division of Pacific Machinery & Tool Steel Co., Portland, Oreg., which recently has been named distributor in the northwestern states by G. S. Rogers & Co., Chicago, for its line of G-S-R specification products used in the heat treatment and finishing of steel.

♦

Charles P. Rogers, since 1929 president, Beals, McCarthy & Rogers Inc., Buffalo, has been elected to the newly created post of chairman of the board. He joined the firm in 1880 as an errand boy. J. Frederick Rogers, associated with the firm since 1924, recently as vice president, succeeds his father as president. George F. Evans, heretofore general manager, has become

Herbert P. Ladds

Who has been elected president, National Screw & Mfg. Co., Cleveland, as reported in STEEL, Jan. 30, page 23

vice president and treasurer. He has been with the company 34 years. The position of general manager has been abolished. Eugene F. McCarthy, secretary and treasurer, has been made vice president and secretary.

♦

Adolph Frankel has been appointed sales manager of special products, lamp division, Westinghouse Electric & Mfg. Co., with headquarters at the Bloomfield, N. J., plant. He formerly was merchandising manager, lamp division, and took direct charge of distribution and marketing of the Westinghouse Sterilamp. He has been associated with the company since 1917.

♦

James P. Raugh has been appointed general sales manager, General Refractories Co., Philadelphia. Mr. Raugh joined the sales staff of the company's Pittsburgh office in 1929, following graduation from the United States naval academy and several years in the naval service. Later he became district sales manager at Detroit and Cleveland, and the past three years has been assistant general sales manager.

Fred M. Miller, associated with General Refractories since 1924, as chief engineer, has become general works manager. He formerly was identified with the Youngstown Sheet & Tube Co., Colorado Fuel & Iron Corp., American Coke & Chemical Co., and St. Louis Coke & Iron Co. A. C. Shape has been named acting chief engineer.

♦

Dr. William A. Lewis Jr., engineer, Westinghouse Electric & Mfg. Co., Pittsburgh, and Westinghouse lecturer in electrical engineering at the University of Pittsburgh, has been named director, school of electrical engineering in the College of Engineering, Cornell university, Ithaca, N. Y. He succeeds Prof. Paul M. Lincoln, who has served since 1922, continuing as acting director after his formal retirement last June.

♦

Robert R. McMath, formerly president, Motors Metal Mfg. Co., Detroit, stampings and sheet metal fabricator, has been elected chairman. Steven J. Menzel, formerly vice president, succeeds Mr. McMath as president; Nelson C. Johnson has been named vice president and secretary; Harold G. Shaw is now treasurer. New directors include Messrs McMath, Menzel, Johnson, Neil C. McMath, Willard S. Pope, Harry A. Burnett and Charles T. Miller.

♦

J. B. Haskell, the past 15 years superintendent, frog and switch department, West Virginia Rail Co., Huntington, W. Va., has been appointed sales manager, rail and track work division. He has been identified with the design and manufacture of track work for many years, having previously been associated with American Frog & Switch Co. as draftsman, engineer and assistant superintendent. During the World war he was ordnance

Charles P. Rogers

J. F. Rogers

George F. Evans

Eugene F. McCarthy

tool engineer, and later tool engineer with the Mosler Safe Co.

♦

Donald B. Patterson, for many years active in the hoist and crane industry, and the past three years Chicago district sales manager, Shaw-Box Crane and Hoist division, Manning, Maxwell & Moore Inc., Muskegon, Mich., has been appointed general hoist sales manager, with headquarters at Muskegon.

G. A. Mitchell, the past five years

Donald B. Patterson

sales manager, hoist division, has been named sales promotion manager. Prior to the formation of the Shaw-Box Crane & Hoist division, he was secretary and sales manager, Box Crane & Hoist Corp., which was purchased by Manning, Maxwell & Moore.

♦

L. R. Kells has been appointed chief engineer, Salem Engineering Co., Salem, O. Mr. Kells graduated

L. R. Kells

from Ohio State university in 1914 and has been associated with the industrial furnace industry for more than 20 years.

♦

A. F. Plant, since 1927 district

G. A. Mitchell

manager at Detroit for Austin Co., and in charge of operations in that territory since 1922, has been named regional vice president, with headquarters at the company's regional offices, 2842 West Grand boulevard, Detroit. Associated with the company since April, 1920, Mr. Plant supervised the design and construction of the Pontiac plant built in 1926, as well as large industrial buildings for American Blower Corp., Saginaw Malleable Iron Co., and Goodyear Tire & Rubber Co.

♦

Lester A. Lanning, chief metallurgist, New Departure, division General Motors Corp., Bristol, Conn., has been promoted to assistant plant manager. Mr. Lanning formerly was superintendent of New Departure's heat treating division. He is a member, American Society for Testing Materials, British Iron and Steel institute, Hartford chapter of American Society for Metals.

John C. Kielman has been promoted to superintendent of New Departure's heat treating division. He formerly was assistant superintendent.

DIED:

■ WILLIAM P. BRADBURY, 53, vice president and general sales manager, Consolidated Ashcroft Hancock division, Manning, Maxwell & Moore Inc., Bridgeport, Conn., in that city, Jan. 14. He joined the company in 1902 as an office boy, advancing through various positions until he became general sales manager in 1923, and vice president in charge of sales in 1930.

♦

Francis Hector Clergue, 82, president, Universal Engineering Corp., builder of hydraulic canals and power plants at Sault Ste. Marie, both Ontario and Michigan, and founder of the Lake Superior Corp., which erected steel mills and blast furnaces at the Soo, Ont., Jan. 19 in Montreal.

♦

Burton M. Pheatt, sales manager, stamping division, Murray Corp. of America, Detroit, in Pontiac, Mich., Feb. 1. Graduate of the University of Wisconsin, he had been associated with Murray 18 years.

♦

Fred O. Smith, 62, vice president, Vulcan Iron Works, Wilkes Barre, Pa., in that city, Jan. 21. He was also president, Wilkes Barre Mfg. Co. Mr. Smith had been associated with Vulcan since graduation from Harry Hillman academy.

♦

Joseph Chilberg, 79, former vice president and director, Colorado Fuel & Iron Corp., Denver, recently in Los Angeles.

♦

Nate I. Silver, 51, industrialist, Racine, Wis., Jan. 14. He was head of the Silver Iron & Steel Co. which he organized in 1916. About a year ago he founded the Silver Steel Co.

♦

Reginald B. Palmer, 42, president, Palmer Spring Co., Providence, R. I., in Saunderstown, R. I., recently. He organized the spring company 20 years ago.

♦

Mark D. Kuhn, 68, for 40 years affiliated with Charles Dreifus Co., Pittsburgh, dealer in scrap iron and steel, in that city, Feb. 2. He had been vice president for many years.

♦

Clarence L. Jahn, 58, a former Pittsburgh steel executive, recently in New York. Before leaving Pittsburgh, Mr. Jahn had been associated with the former Carnegie Steel Co. and Pittsburgh Steel Co.

♦

Ray A. North, 66, president, Green Bay Foundry & Machine Co., Green Bay, Wis., Jan. 12. Prior to becoming head of the Green Bay firm in 1914 he was an executive of the R. J. Dowd Co., Beloit, Wis.

♦

Loren W. Lashbrook, 45, assistant general sales manager, Mercer Tube & Mfg. Co., Sharon, Pa., recently in Pittsburgh. He formerly had been sales manager, Frick-Reid Supply Corp., Pittsburgh.

♦

Charles N. Ring, well known in the steel foundry industry, at his home in Chicago, Jan. 21. A graduate of University of Missouri in 1904, he practiced law in St. Louis until 1908 when he entered the laboratory of American Steel Foundries. Subsequently he became associated with Alton Steel Foundry, Illinois Steel Co., Laclede Steel Co., Ohio Steel Foundry, and Atlas Steel Castings Co. In 1925 he was appointed assistant director, Electric Steel Founders Research group.

AVIATION

TAKING BIDS ON 2000 PURSUIT PLANES, CARRIER

■ BIDS on a pending purchase of 2000 pursuit airplanes for the army have been submitted by three manufacturers to air corps engineers at Wright field, Dayton, O.

Proposed unit prices were: Curtiss Aeroplane division of Curtiss-Wright Corp., Buffalo, $20,980; Bell Aircraft Corp., Buffalo, $22,275; Seversky Aircraft Corp., Farmingdale, N. Y., $26,000.

Opening of the $330,000,000 air force expansion program with an immediate $50,000,000 appropriation providing at least 565 combat planes has already been asked by the President in a special letter to Speaker Bankhead, Alabama.

The navy is receiving bids until March 22 on construction of the 20,000-ton aircraft carrier HORNET. Costing more than $30,000,000, the craft will require four years to build. Its complement is to comprise 108 fighting planes.

AERONAUTIC EXPORTS INCREASED 73 PER CENT

Aircraft and parts exported from the United States in 1938 totaled $68,209,050, a 73 per cent increase over 1937, reports the automotive-aeronautics trade division, commerce department. During 1937 exports rose 71 per cent; in 1936, 62 per cent.

Last year's shipments: Civil and military planes, 876, valued at $37,977,924; aircraft engines, 1307, valued at $7,899,844; parts, accessories and parachutes, $22,331,282.

The "friendly nations" to whom we sold included Great Britain, France, Russia, Netherlands, Australia, Poland, Roumania, Japan, and South American countries.

New Factory To Produce Insulating Material

■ Following upon the recent news that Johns-Manville is opening three new plants to be in operation early this year, Lewis H. Brown, president, has announced the establishment of a fourth new unit at North Billerica, Mass., near Lowell, for making marinite and marine sheathing, fireproof panel materials used in ship construction. Marinite will now be available for use as an insulating material for temperatures up to 900 degrees Fahr., in ovens, glass lehrs, boilers and other types of heated equipment.

The factory, with about 2½ acres of floor space is located in the former carshops of the Boston & Maine railroad.

The three other new plants include one now nearing completion at Jarratt, Va., soon to start manufacture of insulating board products for homes and commercial buildings; another at Watson, Calif., which recently began production of rock wool home insulation and Transite asbestos-cement pipe to supply the western market; and the third at Richmond, Ind., which is to start shortly the manufacture of a new line of all-mineral insulations for control of heat, cold, and sound in mechanical refrigerators, railroad cars, automobiles and airplanes.

Nicholson File Marks Seventy-fifth Year

■ Nicholson File Co., Providence, R. I., is observing its seventy-fifth anniversary this year. Paul C. Nicholson, vice president, calls attention to the fact the anniversary also commemorates the introduction by William T. Nicholson of a practical method of cutting quality files by machinery. Founded in 1864, the company was so successful that 14 years later it was supplying an annual volume double that of all file imports.

The Nicholson company now has four plants, at Providence, Philadelphia, Anderson, Ind., and Port Hope, Ont. Much of the equipment was designed and built in its own shops. Its products cover a wide range of files of its own design and various commercial brands.

Industrial Inventories Near 1928-1929 Level

■ Inventories of 50 large industrial companies have been reduced about 26 per cent in the past year, but still are higher than in 1928 and almost as high as in 1929. Trend during the last half of 1938 was upward. Peak in past 11 years was reached in third quarter, 1937, when stocks totaled $286,000,000.

Dollar figures compiled by D. C. Elliott, reconstruction finance corporation statistician, and published in the *Cleveland Trust Bulletin:*

1928	$207,000,000	1934	$166,000 000
1929	226,000,000	1935	194,000,000
1930	187,000,000	1936	239,000,000
1931	148,000,000	1937	267,000,000
1932	120,000,000	1938*	211,000,000
1933	151,000,000		

*End of third quarter.

■ Electrical equipment for six diesel-electric 750-horsepower streamlined trains, to be placed in service this summer by Southern railway, has been ordered from Westinghouse Electric & Mfg. Co. The contract amounts to more than $100,000. The engines are being built by Fairbanks-Morse Co., the train by the St. Louis Car Co.

Workers Finance Armco Village

■ SIMPLE but ingenious is the plan for financing Fertile Valleys Homesteads, garden village of steel homes, to be erected near Middletown, O., by American Rolling Mill Co. employes, as announced in STEEL, Jan. 30, p. 17.

The 60 employes who will purchase the homes will be sole common stockholders in a building company, Operative Homestead Builders Inc. The building company will buy the land and arrange with contractors to erect the homes, water and sewage systems, streets and other improvements.

When the village has been completed, the building company will be dissolved and the stockholders will be paid book value for their stock, including all profit. Purchasers then can use the profit received to make part of the down payment when applying for FHA loan on the home.

Completely Self-Governing

The community will be entirely self-governed. Each homestead purchaser will become a member of a community association, which will make and enforce necessary restrictions and regulations.

Houses will be especially designed for rural living and were planned under the supervision of Walter R. McCornack, chairman, the committee on small dwellings of the Institute of American Architects. Each will be of self-framing, fire-safe steel construction, insulated and weather-stripped, and will include modern bath, electric lights, furnace and basement, with a special cold cellar for storing fruits and vegetables.

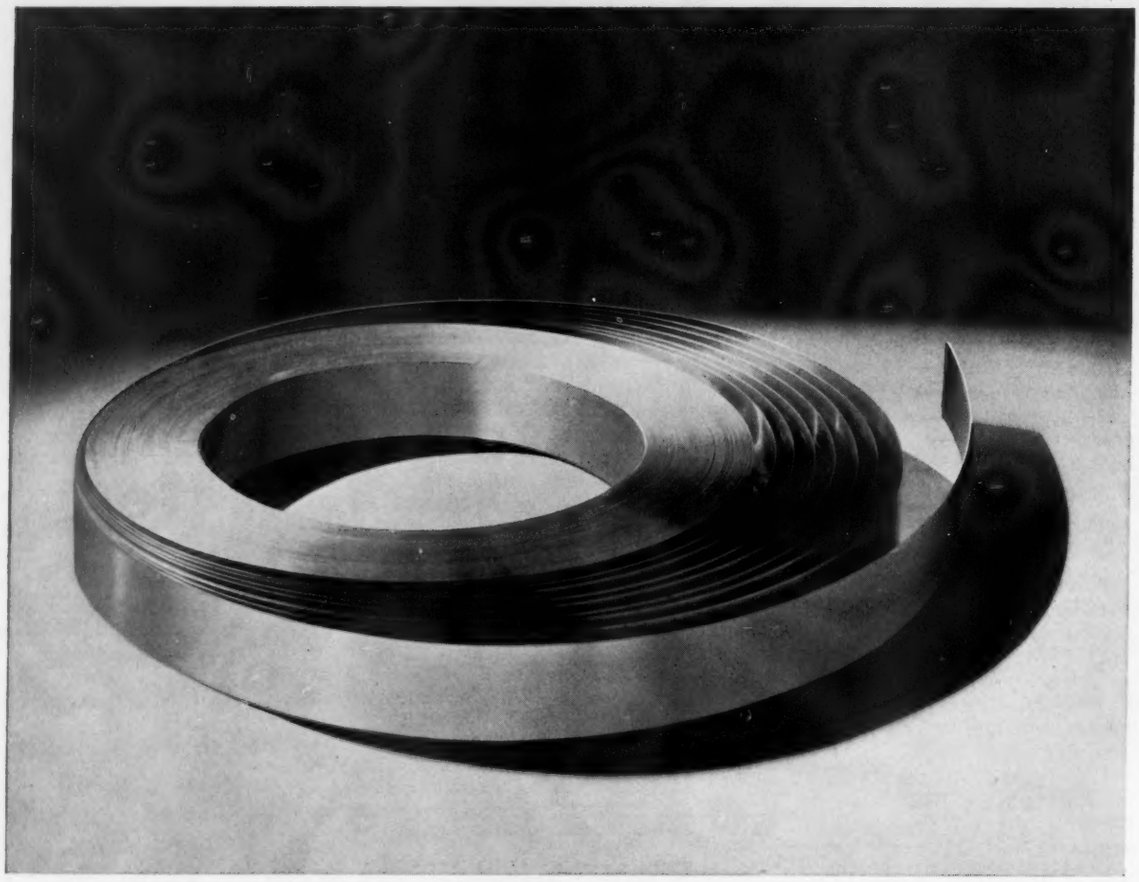
Six floor plans are available. Prices range from $4500 for a two-bedroom house to $5300 for one with three bedrooms. Each will be surrounded by an acre of fertile gardening land.

"With the five-day week," commented Charles R. Hook, Armco president, "a man at most spends only 40 hours on the job out of 168 hours in the week. This gives him plenty of time to care for a garden and still have time for sleep and recreation."

Mr. Hook said the idea was suggested by the employes. "What we are actually doing is to help our employes help themselves."

■ Annual meeting of the British Iron and Steel institute will be held May 4-5 at the Institution of Civil Engineers, London. K. Headlam-Morley, 4 Grosvenor Gardens, London, S.W.1, is secretary.

QUALITY+SERVICE



The values of high quality are further elevated, when *service* is on the same level. Service is the unseen quality which is not easily described, but quickly recognized when received.

Here at Washburn you will find a medium size organization which is at all times in close touch with mill schedules and operations. This executive attention to orders places service on a par with Washburn's high standards of quality.

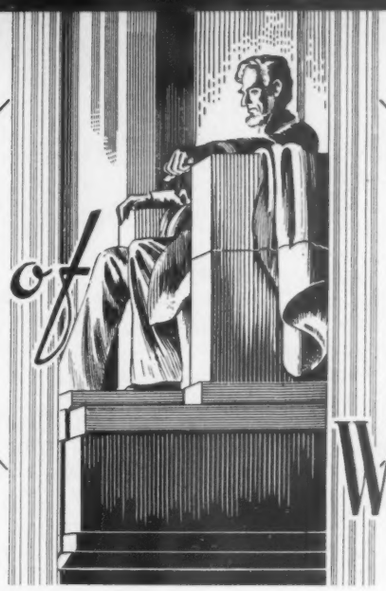
Washburn Flat Strip is obtainable in cold-rolled high or low carbon steel, in widths from one-sixteenth inch to six inches, in several finishes including: Bright, Galvanized, Tinned and Cadmium.

WASHBURN WIRE CO., PILLIPSDALE, R. I. • WASHBURN WIRE CO., INC., NEW YORK CITY

WASHBURN

CLEAN, UNIFORM BILLETS - STRIP - RECTANGULAR, ROUND, FLAT RODS
TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRES

Windows of WASHINGTON



By L. M. LAMM
Washington Editor, STEEL

WASHINGTON

■ CONGRESSIONAL inclination to criticize the national labor relations board is increasing. Several bills for amendments to the law already have been introduced. Last week, Representative Anderson, Missouri, one of the board's critics, introduced a resolution calling for the appointment of an independent committee to investigate the board's personnel and to report to congress changes necessary in the board and the labor act to produce harmony in industrial relations.

Anderson asked a ten-man committee be appointed by the speaker and $50,000 appropriated for its expenses. The resolution requires the committee to issue its report to congress not later than June 1. Anderson introduced a bill to repeal the Wagner act and set up a new board Jan. 18. His bill shears the national labor relations board of its judicial function and places final disposal of the controversies under the act in the United States district courts.

"Proof of the Pudding"

"Proof of the pudding," Anderson said, "is in the eating. The Wagner act created the national labor relations board for the purpose of eliminating strife in the relations of capital and labor. The eating, so to speak, has shown conclusively that the pudding did not turn out as its chefs had expected and promised.

"The records show that the board has not functioned as was intended. It has been partial, unfair and despotic. Its conduct has been such as to create suspicion of its motives among the American people. Its personnel has been charged with agitating strife and discontent instead of soundly administering the law as intended. Its activities and decisions have been of such a character that the oldest labor group in the nation, the American Federation of Labor, has demanded amendment of the act and has served notice that it will oppose confirmation of one of the present members of the board."

THORP SUGGESTIONS SEEN AS HOPKINS "TRIAL BALLOON"

Dr. Willard L. Thorp, No. 1 advisor to Secretary of Commerce Hopkins, put up a couple of trial balloons last week in connection with the possible reorganization of department facilities.

Dr. Thorp, who contended he was speaking for himself and not for the secretary, said it might be a good plan for the commerce department to have traveling salesmen for various industries who would contact specific industries in the producing centers.

Dr. Thorp also suggested tax changes so that new enterprises would not be taxed as high as established industries.

Secretary Hopkins has stated none of the accounts of his proposed reorganization published to date are correct and there is a feeling in well informed circles in Washington that the Thorp statement was made as a "feeler" to sound out industry.

While members of the department's business advisory council are not disposed to discuss what they are doing, it is understood a report is being prepared under the direction of the council to show the undistributed profits tax is unsound and is one of the things preventing business recovery.

At the end of this year, the corporation tax schedule of the present revenue laws expires and so it will be necessary for congress to take some action at the present session. For that reason the council is making an effort to work up a good report on corporation taxes to be placed before the President as early as possible.

WOULD BAN EXPORTS TO JAPAN AND CHINA

Representative Fish, New York, last week introduced a bill in the house to prohibit the exporting of pig iron, scrap iron and scrap steel to China and Japan. The bill was referred to the house committee on foreign affairs.

Fish said three ships were loading at Los Angeles with scrap iron for shipment to Japan when he introduced the bill and that this scrap will be used for military purposes.

"The American people," he said, "are almost unanimously against supplying Japan with arms, ammunition and war materials. My proposal is to stop shipments of pig iron, scrap iron, or scrap steel to both Japan and China, and not single out any one country but apply the provisions of the bill equally against all belligerents."

The bill provides: "That it shall be unlawful to export any pig iron, scrap iron, or scrap steel from the United States, or any territory subject to the jurisdiction thereof, to any port or place in China or Japan, or to any other port or place for trans-shipment to Japan or China, to be used in the manufacture of implements of war or for military purposes.

Bill Sets Up Penalties

"Any person, firm or corporation violating the provisions of this act shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not more than $5000 or by imprisonment of not more than one year. Each export shipment in violation of this act shall be considered a separate offense."

A bill was also introduced by Senator Sheppard, Texas, which was referred to the military affairs committee "that the secretary of war be . . . . authorized to exchange obsolete, unsuitable, and unserviceable machines and tools and parts thereof, pertaining to the manufacture or repair of ordnance material for use in the national defense, for new machines and tools of the

same or equivalent general character."

Sheppard also introduced a bill authorizing the purchase of equipment and supplies by the war department for experimental and test purposes. It provides:

"That the secretary of war may, at his discretion, purchase abroad or in the United States with or without competition, by contract or otherwise, such ordnance, signal, and chemical-warfare equipment, supplies, parts, accessories, or designs thereof, as may be necessary in his judgment for experimental or test purposes in the development of the best kind of equipment and supplies required for the national defense."

STEEL WAGE MINIMUMS TO GO INTO EFFECT MARCH 1

"In order that industry (steel) may make necessary adjustments to comply with the decision," Charles V. McLaughlin, acting secretary of labor, last week postponed the effective date of the minimum steel wage decision under the Walsh-Healey act from Jan. 31 to March 1.

Bethlehem Steel Corp. and 29 smaller steel mills applied to the secretary of labor for a 60-day extension, were granted 30 days. From the action taken it appears the department will do nothing further in this matter. There seems to be some difference of opinion as to how, if it cares to, the steel industry could get the case into the courts. This matter is reported being given some consideration.

Of course, exemptions can be made under the order but such exemptions would have to be made for each individual contract.

PROPOSES AMENDMENTS TO WALSH-HEALEY ACT

Senator Walsh, Massachusetts, cosponsor of the Walsh-Healey act, last week introduced a number of amendments to the law. These provide:

1. Extending jurisdiction of the act to contracts and immediate subcontracts entered into by the contractor for the express purpose of performing his contract with the government where those contracts and subcontracts exceed $2000 instead of the present $10,000 provision.

2. Extending coverage of the act to include vessels and equipment which, insofar as the navy is concerned, must be built or repaired in accordance with the provisions of the Walsh-Healey act, so that the requirements now binding on the navy will apply to all government contracts.

3. Including nonprofessional service contracts to prevent service industries, such as laundries, taking government business by sweatshop practices.

4. Amending present wage provision by incorporating the language of the fair labor standards act by permitting deductions for "board, lodging, or other facilities . . . . customarily furnished by such employer to his employes."

5. Dropping the present Walsh-Healey prohibition of the employment of female minors under 18 to permit boys and girls over 16 to be employed except in hazardous occupations, where they are prohibited until they are 18.

6. Permitting the recovery on behalf of employes of double the amount due them for underpayment of the minimum wage or overtime in the case of a second offense by the same employer, and treble the amount in the case of subsequent offenses. At present no penalty is provided for a violation of the statute except the invocation of the so-called "blacklist" provision which allows the secretary of labor to put on the ineligible list for three years violators of the act. This provision is so drastic that it has been rarely exercised.

It is noted the highly controversial provision proposed by the labor department, providing for the blacklisting of all violators of the national labor relations act, is not included.

GOVERNMENT STEEL AWARDS AGGREGATE $428,703

For the week ended Jan. 28, the government purchased $428,703.37 worth of iron, steel and their products under the Walsh-Healey act, as follows: Kilby Steel Co. Inc., Anniston, Ala., $66,112; Hoffman Hardware Co., Los Angeles, $13,480.87; Associated Piping & Engineering Co. Ltd., Los Angeles, $15,800; Columbia Steel Co., San Francisco, $67,929.23; Allegheny Ludlum Steel Corp., Brackenridge, Pa., $30,831.65; Henry Disston & Sons Inc., Philadelphia, $20,673.95; Joseph T. Ryerson & Son Inc., Chicago, $12,906.31; Republic Steel Corp., Massillon, O., $16,238.78; Treadwell Construction Co., Midland, Pa., $59,960; Phillips & Davies Inc., Kenton, O., $57,999.96; The Mills-Morris Co., Washington, $11,655.02; Elliott Bros. Steel Co., New Castle, Pa., $12,803.60; Bay State Tool & Machine Co., Springfield, Mass., $42,312.

REPORT ON EXPERIMENTS ON ENAMELING METALS

A contribution to the technique of enameling metals has been made by William N. Harrison, Benjamin J. Sweo, and Stephen M. Shelton of the national bureau of standards, department of commerce. After studying the behavior of a large number of ground-coat enamels during heating and cooling cycles, they have derived constants for each one which, when substituted in simple first-order equations, permit computation of the expansivity of each frit at any stated temperature or in any temperature interval between 77 degrees Fahr. and the critical temperature.

Since differential contraction between the enamel and the iron base is a frequent cause of failure and loss in the manufacture of enameled iron ware, the value of this work is easily understood.

In commenting on the bureau's close co-operation with the vitreous enamel industry, Mr. Harrison, who has charge of all the bureau's work in this field, points out that although the important role played by thermal expansivity of enamels has been widely recognized, certain relations have not, however, been fully established. It was to clean up these uncertainties that the present work was undertaken.

HOOK ASKS LABOR ACT CHANGE IN RADIO DEBATE

Charles R. Hook, president, American Rolling Mill Co., and chairman, National Association of Manufacturers, and Warren Madden, chairman, national labor relations board, argued the merits and defects of the Wagner act before a radio audience last week.

An admendment to the act was urged by Mr. Hook to provide for more protection for employers and labor minorities. He criticized the board's administration and said it "might have done much to convert a poor law into a reasonable and fair law." Declaring that the law is one-sided, Mr. Hook also recommended that it be amended to recognize the mutual interest of the employer and employe and to make assurances that employes will not be subject to coercion from any source.

Mr. Madden cited what he termed significant gains under the act, contending there were only half as many strikes in 1938 when the act was in regular operation as there were in 1937 when it was defied.

CENSUS FIGURES REFLECT 1937 STEELWORKS GAIN

Activity of steelworks and rolling mills in 1937, as reflected in employment and production, was far above the level of 1935, according to the biennial census of manufactures. Wage earners in 1937 numbered 479,342, 33.3 per cent increase over 359,630 in 1935. Wages were $779,776,491, exceeding $439,668,575 in 1935 by 77.4 per cent. Value of products, $3,350,491,150, gained 72.4 per cent over $1,931,318,220 in 1935.

Compared with 1933 the gain in employment was 73.1 per cent, in wages 201.3 per cent, and value of products 191.2 per cent.

Steel Imports At 17-Year Low

■ AT THE lowest point since 1921, imports of foreign iron and steel in 1938, scrap excepted, totaled only 240,100 tons valued at $15,001,131, compared with 451,520 tons valued at $24,495,791 tons in 1937, a decrease of 47 per cent, according to the metals and minerals division, commerce department.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1938		1937	
	Exports	Imports	Exports	Imports
Jan.	586,294	29,631	201,692	43,063
Feb.	460,640	19,589	290,987	40,728
March	526,883	11,827	570,584	51,805
April	489,202	21,237	683,674	68,197
May	540,639	20,814	969,222	49,050
June	312,021	15,887	826,534	44,771
July	263,699	14,728	889,438	47,012
Aug.	242,139	20,041	836,319	61,489
Sept.	346,068	27,958	543,740	37,071
Oct.	425,431	26,445	522,611	37,186
Nov.	646,157	27,627	556,691	26,996
Dec.	490,095	28,767	626,418	25,792
Total	5,152,707	264,551	7,567,884	533,160

Despite a decrease of 36,624 tons, structural shapes furnished the largest import item with 39,389 tons. Pig iron showed the sharpest reduction, 33,088 tons in 1938, a loss of 78,609 tons from 1937. Ferromanganese receipts at 21,125 tons were 2840 tons less than in 1937.

Belgium was the principal source of imports, the total in 1938 being 76,202 tons, a drop of 60,000 tons from 1937. Germany's shipments, 48,745 tons, were less by a third and those of France, 21,564 tons, were one-fourth less. Imports from Canada, 21,536 tons, and the Netherlands, 20,732 tons, were also sharply lower.

ORIGIN OF DECEMBER IMPORTS

Gross Tons

	Iron ore	Pig iron	Manganese ore	Ferro-manganese
Norway	14,034	.....	.....	1,127
United Kingdom	45	.....	.....	.....
Canada	60	790	1	.....
Cuba	21,000	.....	9,318	.....
Chile	139,800	.....	.....	.....
Australia	1,500	.....	.....	.....
Iran	1,500	.....	.....	.....
Netherlands	.....	150	.....	2,422
British India	.....	297	537	.....
Soviet Russia	.....	.....	9,797	.....
Gold Coast	.....	.....	10,143	.....
France	.....	.....	.....	388
Czechoslovakia	.....	.....	.....	396
Total	177,939	1,237	29,796	4,333

	Sheets, skelp and Sawplate	Structural steel	Steel bars	Hoops and bands
United Kingdom	7	36	8	.....
Belgium	16	2,840	1,048	1,477
France	6	342	464	540
Germany	2	400	271	126
Sweden	3	.....	61	.....
Canada	.....	3	.....	.....
Czechoslovakia	.....	.....	2	.....
Total	34	3,621	1,854	2,143

U. S. IMPORTS FOR CONSUMPTION OF IRON AND STEEL PRODUCTS

Gross Tons

Articles	Dec. 1938	Nov. 1938	Jan.thru Dec.'38
Pig iron	1,237	1,493	33,088
Sponge iron	83	56	519
Ferromanganese (1)	4,333	2,571	21,125
Spiegeleisen	2,440	5,056	17,267
Ferrochrome (2)	21	.....	121
Ferrosilicon (3)	251	69	930
Other ferroalloys (4)	25	17	43
Steel ingots, blooms	...	7	204
Billets	37	23	351
Concrete reinforc. bars	317	114	1,532
Hollow bar, drill steel	48	133	864
Bars, solid or hollow	1,854	1,730	18,898
Iron slabs	.....	.....	.....
Iron bars	20	33	505
Wire rods	480	803	5,280
Boiler and other plate	1	53	357
Sheets, skelp, saw plate	34	182	6,045
Die blocks or blanks	3	22	96
Tin plate, taggers' tin and terne plate	7	10	108
Structural shapes	3,621	3,798	39,389
Sashes and frames	.....	.....	.....
Sheet piling	...	...	235
Rail and fastenings	281	299	3,621
Cast iron pipe and fittings	171	148	1,544
Malleable iron pipe fitgs.	...	...	76
Welded pipe	515	440	5,882
Other pipe	1,729	1,709	23,223
Cotton ties	.....	.....	8,692
Other hoops, bands	2,143	1,658	17,439
Barbed wire	738	559	12,527
Round iron and steel wire	264	252	1,684
Telegraph, telephone wire	11	7	27
Flat wire and steel strips	295	302	2,692
Wire rope and strand	114	157	2,021
Other wire	73	208	1,459
Nails, tacks and staples	677	842	7,600
Bolts, nuts and rivets	5	21	212
Horse and mule shoes	24	25	428
Castings and forgings	396	81	3,816
Total (gross tons)	22,248	22,878	240,100
Iron and steel scrap	6,519	4,749	24,451
GRAND TOTAL	28,767	27,627	264,551

(1) Manganese content; (2) chrome content; (3) silicon content; (4) alloy content.

December imports at 22,248 tons valued at $1,405,704 were 630 tons smaller than in November but were valued at $3483 more. Receipts in December, 1937, were 25,104 tons valued at $1,568,033.

Ferromanganese led December imports with 4333 tons, compared with 2571 tons in November. Structural shape imports were 3621 tons, only 177 tons under November, while spiegeleisen at 2440 tons was 2616 tons below the preceding month.

Belgium was the chief supplier in December with 6273 tons, of which 2840 tons were structural shapes, 1477 tons hoops and 1048 tons bars. Germany's shipments were 4356 tons, an increase of 1073 tons over November. Canada's December shipments were 3285 tons, including 2437 tons of spiegeleisen and 790 tons of pig iron. Ferromanganese furnished 2422 tons of the Netherland's total of 2614 tons.

Scrap imports in 1938 registered a decline of 70 per cent in volume and 75 per cent in value from 1937. In 1938 scrap imports were 24,451 tons valued at $281,240, compared with 81,640 tons valued at $1,153,206 in 1937. Canada, supplying 23,680 tons, was the only important source. December scrap imports at 6519 tons valued at $76,649 compared with 4749 tons valued at $50,789 in November and with 688 tons valued at $13,186 in December, 1937.

1938 Scrap Exports Top All but 1937 Record

■ EXPORTS of scrap in 1938 totaled 3,003,523 gross tons, of which 2,979,006 tons were iron and steel scrap, 12,554 tons tin plate scrap and 7254 tons waste-waste tin plate, according to the metals and minerals division, commerce department.

This was the highest scrap export total for any year except 1937 when 4,092,590 tons was reached, with value of $79,205,113. The 1938 value was $45,891,993. Average value per ton in 1938 was $14.95 compared with $19.35 in 1937, reflecting lessened world demand.

Japan and the United Kingdom, principal scrap buyers in 1937, curtailed purchases in 1938, Japan taking 1,381,901 tons against 1,904,768 tons in 1937 and the United Kingdom 390,319 tons against 845,216 tons. Italy increased its scrap purchases from 381,394 tons in 1937 to 437,025 tons, and Germany from 88,153 tons to 230,903 tons. The Netherlands took 206,570 tons in 1938, against 143,401 tons in 1937. Canada bought only 92,217 tons, about half her 1937 purchases of 135,566 tons in 1937.

Crucible Says Reports Of Removal Inaccurate

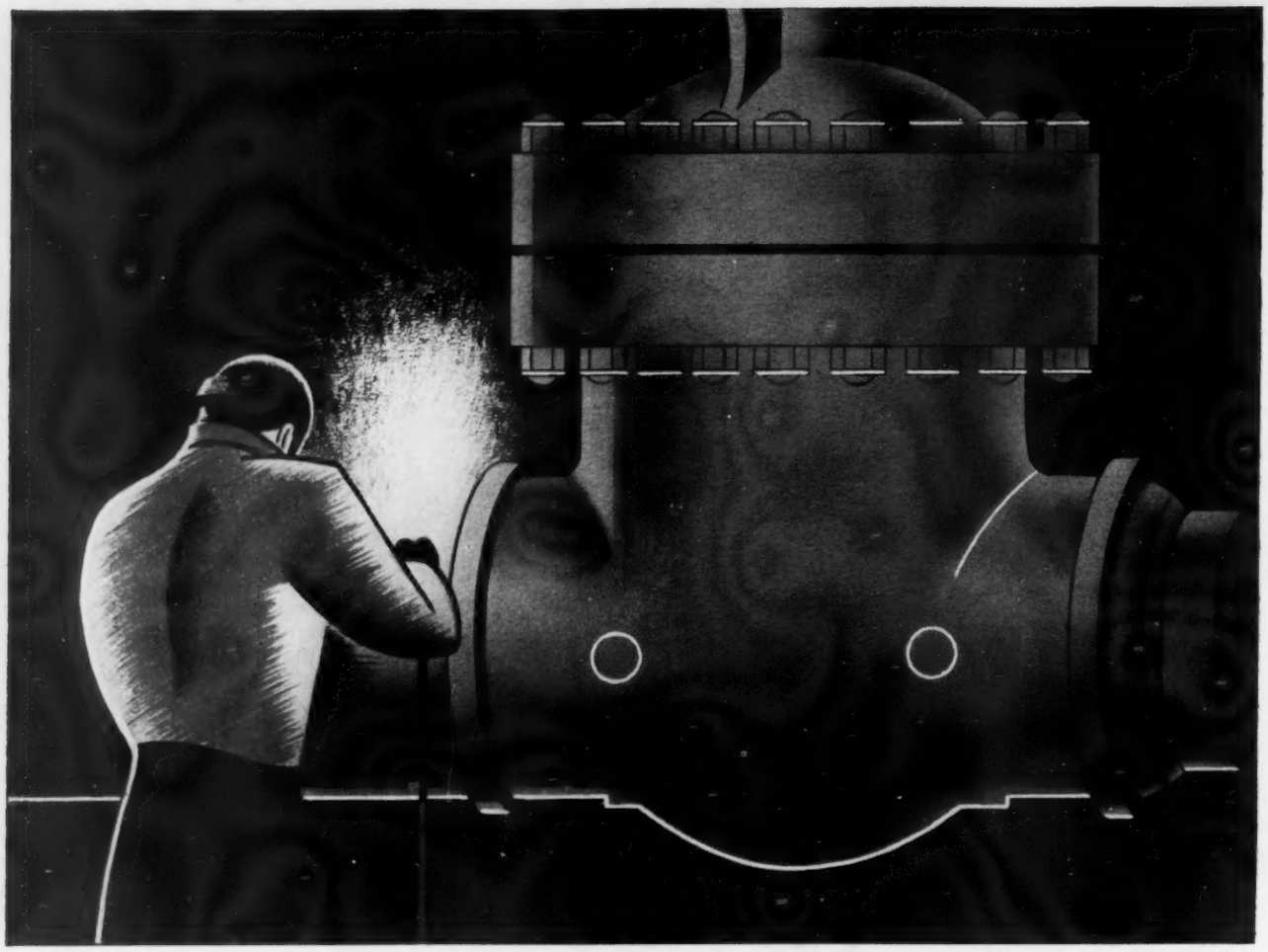
F. B. Hufnagel, chairman of Crucible Steel Co. of America, has issued the following statement:

"Reports not emanating from company officials are circulating that Crucible Steel Co. of America has decided to expand its Syracuse plant by moving certain facilities from New Jersey to Syracuse. These reports are premature and do not accurately reflect the facts.

"The company has for some time been investigating and developing plans for consolidating and modernizing its plants in order to promote greater efficiency and increased operating economies. No decision has yet been made."

Blaw-Knox Plans Work

■ Blaw-Knox Co., Pittsburgh, closed a four-day sales convention, attended by 150 of its district office representatives, with a dinner and meeting at the Duquesne club, Feb. 1. William P. Witherow, president, and Chester H. Lehman, executive vice president, addressed the group. The activities included a tour of the company's nine Pittsburgh divisions, following three days of product examination and sales planning.



IT'S 10 TO 1

. . . your vital problem right now is a better product at a competitive cost; and improved materials may be the answer. A recheck of your alloy steel specifications may well bring to light possibilities for added economy and efficiency through a broader use of Molybdenum steels.

Here's a concrete case. Several important manufacturers of steam generating equipment have adopted Carbon-Molybdenum steel for many different parts. They find that the higher creep strength of the steel makes possible higher operating temperatures and pressures. In addition, Carbon-Molybdenum steel is easily welded.

What is more, Carbon-Molybdenum steel not only meets the physical requirements, but comes within the cost limitations that always exist. We will gladly send our technical books, "Molybdenum in Steel" and "Molybdenum in Cast Iron", free to any engineer or production man interested in improved materials giving more per alloy dollar.

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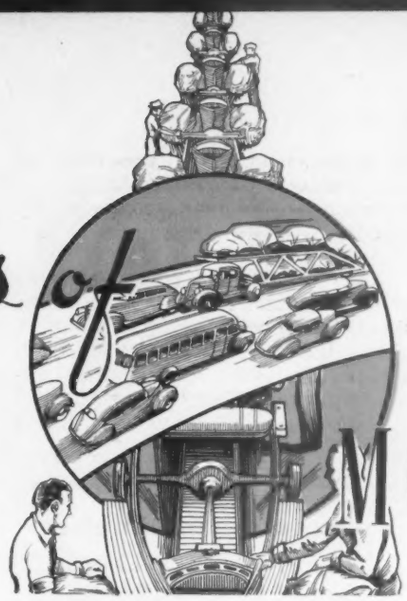

By A. H. ALLEN
Detroit Editor, STEEL

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DETROIT

■ HOTTEST project in this blizzard-ridden town at the moment is the new Packard model on which buying appears to have been started in a major way. Releases have been made on body dies, and last week figures were up for consideration on a considerable volume of heavy automatic welding equipment. As far as steel is concerned, it is difficult to determine whether any purchases have been made specifically for this new light six, but a fair tonnage was placed within the last two or three weeks.

It is estimated about four months will be required to complete body dies, so at the earliest assemblies could not be rolling much before July 1, thus giving rise to the belief the model will be of 1940 vintage, ready for public introduction this summer.

Decision apparently has been reached to build bodies in the Packard plant, and shortly a new "body bridge" will be built across East Grand boulevard, connecting the north and south divisions of the plant. Body and chassis, of the integral type, will be stamped and assembled in the south division, then conveyed across the boulevard to the final assembly line in the north division.

Chassis, Body Integral Unit

Motors will start in the foundry at the extreme north end of the plant and gradually move southward through machining and subassembly operations to the final assembly point. Without the overhead body bridge, permission for which was granted some weeks ago by the city council, it would be necessary to truck chassis across the boulevard—a serious inconvenience in the production of a large-volume model such as proposed.

An interesting type of body construction will be initiated in this model. No separate frame unit such as used on most cars will be required. Central structural member, according to those who have seen it, is a heavy-gage steel floor panel extending from about the dash line in front to a point just past the rear seat in back. Edges of this panel or floor pan will be formed into channel sections for additional strength and members will be attached at front and rear to support the motor and front axle, and the rear suspension. Sides of the body will be single stampings assembled to the bottom unit in special fixtures.

Result will be that instead of a body chopped off at the dash and later dropped over an assembled chassis, a complete unit comprising body and chassis will be assembled and finished preparatory to installing motor and other auxiliaries. Naturally this will call for extensive changes in such facilities as conveyors, spray booths, baking ovens and the like, because of the added length of each unit, compared with conventional bodies.

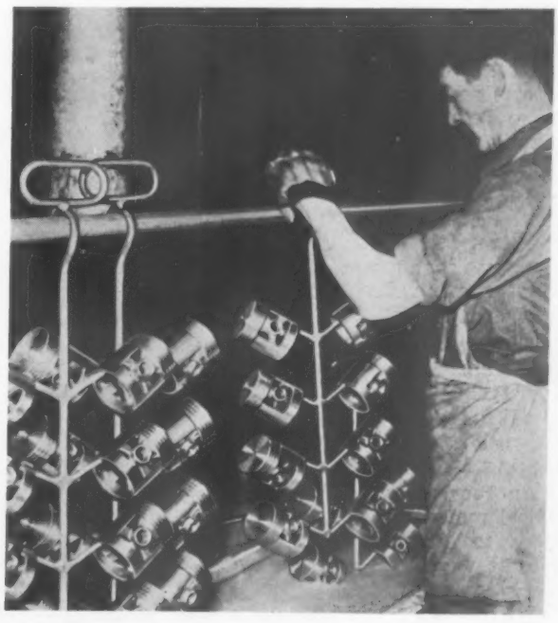
It is generally believed the new light six which Studebaker is preparing for early introduction will use a similar type of body construction. In fact, this type of design is resorted to in most of the so-called "small cars" which engineers have been working over for the past year or two. Nash has a model of this type, and latest reports are to the effect this producer is dusting off the plans, preparatory to initiating construction activity. Sample models already have been built.

■ MONTAINOUS snows put an appreciable crimp in assemblies last week, as completed cars started backing up in driveaway buildings and lots. Plymouth, Dodge and

✦

Tinning Pistons

■ Aluminum pistons for Dodge engines are coated with tin by immersing racks of cleaned pistons in a hot sodium stannate solution. Aluminum displaces tin in the solution and a layer of tin is "plated" on surfaces. The coating is claimed to result in improved wearing quality, greater fuel and oil economy



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Dodge truck divisions were forced to call a halt to final assembly lines Wednesday because of the jam at driveaway points, but operations resumed the next day. The choking at assembly lines was reflected in operations at the Mack avenue plant of Briggs, and a similar shutdown there was necessitated.

The tieup appeared to be concentrated around Detroit, however, as General Motors reported their divisions unaffected.

February schedules generally show a downward trend in keeping with the seasonal slowness usually experienced at this time. Scrap lists, a good barometer of prospective assemblies, indicate an average decline of around 25 per cent from the January level. This would mean weekly schedules of around 65,000, instead of the 85,000 average prevailing last month.

Every indication points to an upward resumption of production in March, and there is no disposition to consider the current easiness anything more than seasonal—in spite of the sweeping losses in stock quotations.

Steel buying for automobile accounts continues in satisfactory volume, with acceleration looked for as spring schedules become defined more clearly. Some companies specify steel requirements on a month-to-month basis; others release tonnage for a certain number of cars, generally close to probable output for a month. Buick is an example of the first practice, Ford of the latter.

■ TO ERR is human, they say, and the automotive industry certainly has its human moments. While it may not be politic to call attention to designers' and engineers' bulls, it is interesting to observe that even the cream of engineering talent, reinforced by millions of dollars spent for proving grounds, test equipment and other torture devices devised to determine an automobile's ability to "take it," can occasionally make slips in what seem obvious details.

No sooner does some "boner" become known, than the word is passed around among competitors, and fantastic tales of erratic performance soon are circulating. Some *faux pas* which have been given this treatment recently:

One model was designed with rear fenders which swept so low over the wheel that on first assemblies it was impossible to remove the rear wheels with ordinary jacking facilities.

Another sport model, with spare wheel mounted in front fender, had the wheel located so far to the rear that it was impossible to open the front door more than 45 degrees.

Still another car sported a front bumper so close to the radiator grille that it was impossible to attach a tow line, and a sharp bump usually resulted in damage to the grille.

Changes in rear frame contour of another make were greeted with reports of bodies springing out of shape, doors flying open when traveling over rough roads, cracks appearing around body pillars, etc.

Naturally all of these apparent mistakes were rectified in a hurry, and in most cases nothing was heard of them outside of Detroit, so the defects had no chance to be reflected in sales. But probably more than one engineering department has had to bear the brunt of caustic comment from executive and sales departments.

Speaking of defects recalls the story told about the late Henry M. Leland who, at the time he was manufacturing Lincolns, was confronted with field reports of a mysterious drumming noise somewhere in the tops of new cars. After his own engineers had confessed their inability to locate the trouble, he called in an accoustic expert who proceeded to build a dam of putty around the edge of the top and to fill up the inside portion with sand. Then he raced the motor and examined the behavior of the sand closely. At one point a rippling action was detected. The expert said, "Put a rivet through here and your troubles are over." This was done, the drumming stopped, and the expert presented his bill: Fifty thousand dollars!

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1936	1937	1938
Jan.	377,244	399,186	227,130
Feb.	300,810	383,900	202,589
March	438,943	519,022	238,598
April	527,625	553,231	238,133
May	480,518	540,377	210,183
June	469,368	521,153	189,399
July	451,206	456,909	150,444
Aug.	275,934	405,072	96,936
Sept.	139,820	175,630	89,623
Oct.	230,049	337,979	215,296
Nov.	405.799	376,629	390,350
Dec.	518,958	347,349	407,016
Year	4,616,274	5,016,437	2,655,777

Estimated by *Ward's Reports*

Week ended:	1939	1938†
Jan. 7	76,685	54.084
Jan. 14	86,925	65,735
Jan. 21	90,205	65,418
Jan. 28	89,200	59,365
Feb. 4	79,410	51,443

†Comparable week.

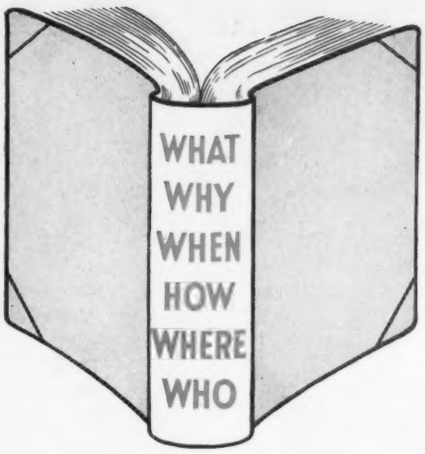
	Week Ended Feb. 4	Jan. 28
General Motors	33,865	35,265
Chrysler	15,820	23,325
Ford	21,750	21,750
All others	7,975	8,860

■ DUAL unionism is in prospect for a number of automotive plants, following the clean break of Homer Martin and his adherents from the CIO. R. J. Thomas has been appointed acting head of the UAW to supplant Martin, and a battle of radio and press is now in full force, with the two opposing camps spending thousands of dollars for broadcast time, expensive legal talent and other artillery to entice the UAW membership, preparatory to national conventions next month. Martin adherents will meet in Detroit March 4; the Thomas wing has issued a call for a meeting in Cleveland March 27. Meanwhile a court battle is in process to determine who shall have the keys to the UAW treasury and records, and who shall receive the UAW mail.

Negotiations between General Motors and the UAW have been suspended indefinitely pending settlement of internal union dissension.

■ GENERAL MOTORS last week began distribution of $1,217,787 in common stock and cash to employes in the group of 1933 who invested in the company's savings and investment plan; the company contributed $591,847 of the total. Each participant who paid $100 into the fund now receives $131 in cash and one share of common stock. . . . M. J. Golden, a regional director of sales for the Chrysler Sales division, has transferred to Willys-Overland as sales manager. . . . Dodge is dispatching a special truck on a goodwill tour to Peru and back, a 14,000-mile jaunt. . . . Buick sales in the second ten days of January were 43 per cent over the same period last year; unfilled orders were 84 per cent ahead of last year.

Nash-Kelvinator soon will announce a new type of hermetically-sealed refrigeration unit manufacture of which is now under way. Norge, it will be recalled, also has equipped a division to build this type of refrigeration unit. . . . Of 140 hourly rate departments in the Pontiac plant, 121 had no lost-time accidents during 1938, the entire plant setting up an all-time record for safety. . . . Dodge has introduced a new town coupe with a rear compartment carrying a folding seat for extra passengers. Rear windows may be opened for additional ventilation, an innovation. . . . Gordon M. Buehrig, designer associated with Cord, is attempting to line up capital to launch a new car, the Texas Ranger, which he proposes to build at Corpus Christi, Tex., with Budd supplying bodies, Lycoming Aircraft the motors.

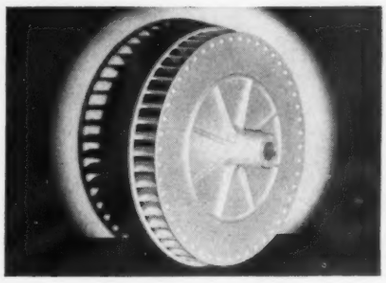


MR. KIPLING PROMPTS A *Quiz*

"I keep six honest serving men
(They taught me all I knew)
Their names are WHAT and WHY and WHEN
And HOW and WHERE and WHO"

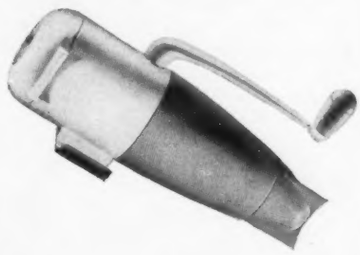
—KIPLING

Q What Metal and Method of Fabrication has Achieved Wide Recognition as a Successful Means of "One-Piece" Production?



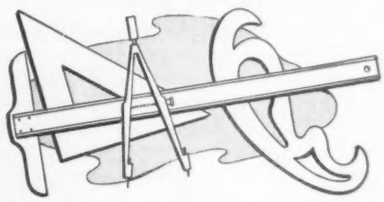
A As a ZINC Alloy Die Casting, this rotor for a Sirocco type blower becomes a simple part, consisting of a hub with a flange having integral blades cast on one side—here's one-piece production with minimum machining costs.

Q Why Do Designers Prefer ZINC Alloy Die Castings for those Applications Where Finish is Important?



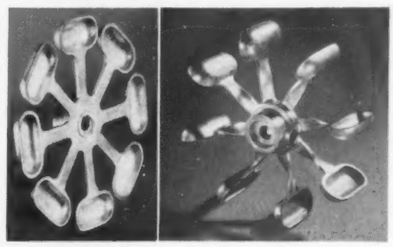
A Whether a part is to be plated or given an organic coating, the smooth surface of ZINC Alloy Die Castings is highly desirable. The die cast housing, lid and crank handle on the "business end" of this ice crusher are pretreated and sprayed with a beautiful white enamel. The finished job will grace even the finest kitchen.

Q When is the Best Time to Consult with the Die Caster on a New Design?



A Early contact with the die caster, preferably while the design of a product is still in the formative stage, will often result in a saving of time and cost.

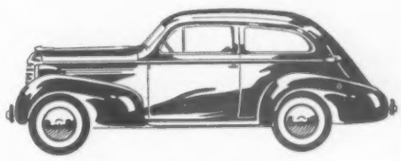
Q How Ductile are the ZINC Die Casting Alloys?



BEFORE AFTER

A Die expense was saved on this little impeller by using a ductile ZINC Alloy, casting the part flat, and later twisting each cup-arm through a 90-degree angle.

Q Where are the Greatest Number of ZINC Alloy Die Castings Used?



A The automobile industry is the largest single consumer of ZINC Alloy Die Castings. Automotive engineers were among the first to visualize and utilize the advantages of this modern production method—and 1939 finds more automotive die castings than ever before.

Q Who in your organization is keeping informed of developments in ZINC Alloy Die Casting? If you are in any way connected with the design, manufacture or sale of metal parts, you should be up to date on this modern metal and method. Consult any commercial die caster—or write to The New Jersey Zinc Company, 160 Front Street, New York.

ZINC ALLOY DIE CASTINGS

The Research was done, the Alloys were developed, and most Die Castings are specified with

HORSE HEAD SPECIAL (99.99+% Uniform Quality) ZINC

MEETINGS

TOOL ENGINEERS PLANNING SESSIONS DURING SHOW

■ A PREVIEW dinner and two symposiums are being arranged by American Society of Tool Engineers in connection with its second Machine and Tool Progress exhibition at Convention Hall, Detroit, March 14-18. These events will take place in the evening so as not to interfere with day-time show attendance.

Leading industrialists, educators, legislators, and others, are being invited to the dinner, March 13, to hear the first report of the society's fact-finding committee on "Relations of the Machine to Employment and Standard of Living." The committee, headed by Prof. John M. Younger, Ohio State university, has collected considerable important material bearing on this subject.

The first symposium, March 14, will deal with "Surface Finish." Proponents of the various methods of accurate surface finishing, including grinding, lapping, diamond boring, honing, superfinishing etc., will present papers. The second symposium, March 16, is on the subject, "New Developments and Their Effect on the Tool Engineer." It will embrace an important group of papers on new methods, materials, equipment etc.

A number of visitations to Detroit plants are being arranged for convention week. The exhibition will more than double the size of the 1938 show and will have a greater diversification of machines, tools, processes, and other equipment. Attendance will be restricted to interested people through a controlled registration.

TWO SYMPOSIUMS FEATURE A.S.T.M. REGIONAL MEETING

American Society for Testing Materials has announced the program for its regional meeting at the Deshler-Wallick hotel, Columbus, O., March 8, in connection with its spring group meetings of committees at the same place, March 6-10. Some 150 meetings of standing committees and their subgroups will be conducted during the week.

The regional meeting will feature two symposiums, one on thermal insulating materials, sponsored by committee C-16 on thermal insulating materials and committee C-8 on refractories, and the other symposium on lime.

Four papers will be presented at the insulating materials symposium as follows: "Factors Influencing Thermal Conductivity of Nonmetallic Materials," by J. B. Austin, research laboratory, United States Steel Corp.; "Methods of Testing Physical Properties of Preformed and Plastic Thermal Insulation," by H. H. Rinehart, Johns-Manville Research Laboratories; "One Consumer's Problems in Selecting Heat Insulation," by E. T. Cope and W. F. Kinney, Detroit Edison Co.; "Effect of Solar Radiation on Heat Transmission Through Walls," by F. C. Houghton, Carl Gutberlet and A. A. Rosenberg, research laboratory, American Society of Heating and Ventilating Engineers.

In the group meetings, committees will review research and standardization programs and take action affecting standards, tentative standards and new specifications being developed. Final action on standards will be taken at the society's annual meeting scheduled for June.

WASTE FUEL SYMPOSIUM AT A.S.M.E. SPRING MEETING

A symposium on waste fuel will be a feature of the spring meeting of the American Society of Mechanical Engineers at the St. Charles hotel, New Orleans, Feb. 23-25. One of the papers scheduled for this session is "By-Product Fuels in the Steel Industry," by Gordon Fox and W. B. Clemmitt.

Among papers to be presented at other sessions are: "Grooving of Tubes in High-Pressure Boilers," by R. E. Hall and E. P. Partridge; "Corrosion in Partially Dry Steam Generating Tubes," by F. G. Straub and E. E. Nelson; "Pulverized Coal Tar Pitch as a Fuel," by E. W. Clarke; and "Industrial Renaissance of the South," by Eugene O'Brien.

INDUSTRIAL RELATIONS IS TOPIC FOR CONFERENCE

"Putting Industrial Relations Policies To Work" will be the theme of the midwinter conference of the personnel division of the American Management association at the Palmer House, Chicago, Feb. 15-17. Sessions will consider three main topics: Industrial relations problems created by recent legislation; company personnel administration; and collective bargaining.

Charles R. Hook, president, American Rolling Mill Co., Middletown, O., and chairman of board, National Association of Manufacturers, will address a luncheon on Feb. 17.

Among addresses to be presented by representatives from the metals industry are: "Merit Rating," by H. H. Kerr, president, Boston Gear Works, North Quincy, Mass.; "Principles of Job Rating," by W. R. Coley, factory manager, Leeds & Northrup Co., Philadelphia; and "Standards of Executive Performance," by William Conover, assistant director of industrial relations, United States Steel Corp., Pittsburgh.

Activities of Steel Users, Makers

■ ALLIS-CHALMERS MFG. CO., Milwaukee, has booked an order valued at nearly $300,000 from Youngstown Sheet & Tube Co., Youngstown, O., for electrical equipment for its 54-inch hot strip mill in Indiana. Principal items are two 6000-kilowatt motor generator sets, and three indoor transformers. Allis-Chalmers has also received an order for 18 large motors from B. F. Sturtevant Co., Boston.

•

Standard Steel Spring Co., Coraopolis, Pa., has opened a new electroplating plant in Coraopolis, designed to handle large sections of steel finishing with nickel plating of a pore-free type.

•

Crucible Steel Co. of America, New York, has purchased the building at 1123-27 Chouteau avenue, St. Louis, comprising 17,000 square feet of floor space, to provide facilities for business in the Southwest. It is of warehouse type.

•

General Electric Co., Schenectady, N. Y., has purchased 77,000 square feet of land in Chicago for the erection of a building to house its Chicago headquarters. Cost of the project is approximately $2,500,000 of which about 20 per cent will represent investment in land.

•

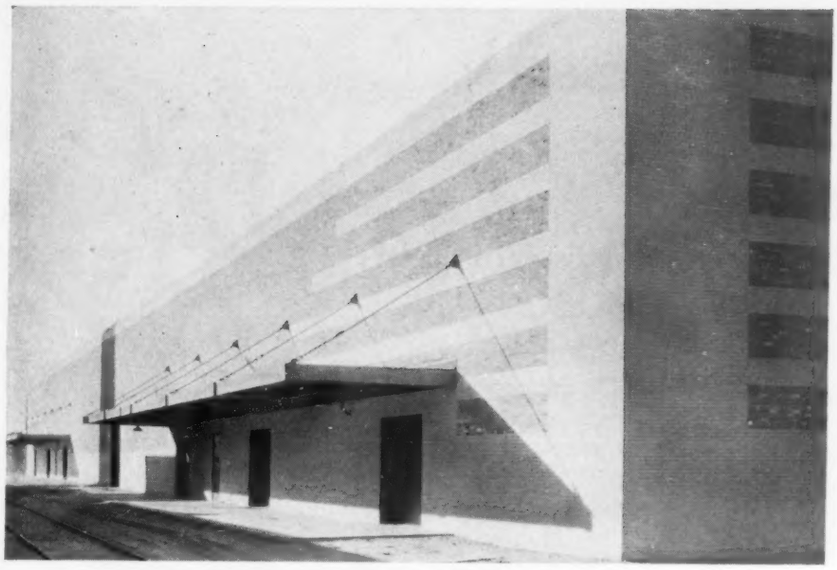
Republic Structural Iron Works Co., division of Consolidated Iron-Steel Mfg. Co., Cleveland, has been appointed distributor of Steelox industrial buildings in Cleveland and surrounding counties, using patented panels manufactured by American Rolling Mill Co.'s fabricating division.

•

Charles C. Lewis Co., Springfield, Mass., has opened a new warehouse in Hartford, Conn., where stocks of steel bars, shapes, plates, sheets and cold finished material will be carried. Personnel of the new branch includes: J. T. Cassels, in charge of office; Clarence Cates, in charge of warehouse, and J. T. Clark Jr. and Neil McPherson, on the sales staff.

•

Woodbury & Co., 133 S. W. Second street, Portland, Oreg., has purchased the H. B. Davis Iron & Steel Co., and will continue to operate the two firms under separate identities. New officers of the Davis organization are: President, S. Woodbury Jr.; vice president and manager, F. F. Holcomb; secretary, George Black; treasurer, Catherine Clark.



■ South side view of the Simonds Saw & Steel Co.'s new windowless plant in which air, light, heat, humidity and sound are controlled

Five-Acre Windowless Plant To House Saw and Steel Company

■ SIMONDS SAW & STEEL CO., Fitchburg, Mass., will complete removal to its new windowless plant early next summer. Heat treating and other furnaces have been installed and the various manufacturing divisions, beginning with the file department, will be shifted as rapidly as possible.

Building is designed for straight-line production, work entering at one end, and flowing through in nine major lines to the finished products. Air, light, heat, humidity and sound are controlled so that night shift production efficiency is comparable to that of day shifts. All production is on one floor, simplifying materials handling.

Plant is a single room 361 x 561 feet, or five acres in area, in which operations previously conducted in three plants comprising 17½ acres will be accommodated, with almost an acre to spare for expansion.

Built by Austin

The building, constructed by the Austin Co., Cleveland, has only 56 intermediate columns and has eight 70-foot aisles with column supports every 40 feet. The 1020 tons of structural steel required were entirely shop welded and include special jack trusses which support the intermediate roof sections. This type of building greatly reduces waste space around the 1000 or more columns required in standard construction. Bottom chords of all trusses are 18 feet from the floor.

Underside of the roof is of perforated metal of hollow rib design into which slab cork has been placed. This in turn is covered by two ½-inch layers of insulated board and topped with water-proofing. The outer walls are used common brick with buff-colored face brick arranged in a decorative effect. A dead air space has been provided between the outer and inner walls, the latter being of acoustic-type cinder block.

Daylight is entirely excluded by the solid walls which permit complete control of illumination without variation day or night. Permanent lighting fixtures of a new type developed by the General Electric Vapor Lamp Co. are being installed. The new 100-watt fluorescent lighting units are tubular in form, approximately 4 feet in length, have efficiency of 50 lumens per watt.

Service lines, including water, gas, steam, power, light, air and oil will be carried directly to more than 1000 machine and furnace locations. More than 38,000 feet of pipe, including cast iron, brass, welded steel, galvanized iron and brass, was required. Special power ducts totaling 17,000 lineal feet were installed on 10-foot centers throughout the plant and have access openings every 2 feet. Also, 60,500 feet of galvanized iron conduit and 177,000 feet of wire and cable were required. The plant has a connected power load of 6000 horsepower. Part of the power required is generated by the company's own diesel plant.

An elaborate system of underground ducts and fans will draw dust-laden air from the various production units.

The plant is equipped with an air conditioning system capable of circulating approximately 400,000 cubic feet of air per minute. Air comes into the structure through louvers on the end walls of four small wings adjoining the plant at points near the corners on either side of the structure. Water for the system is provided by four deep wells producing 1000 gallons per minute at 52 degrees. The conditioned air is distributed through the building by 3000 lineal feet of overhead ducts ranging in size from 68 x 90 inches at the fans to 26 x 20 at the most distant outlet. These ducts are of copper-bearing steel, varying from 16 to 20 in gage.

Used air will be exhausted through 42 ventilating hoods in the roof above furnaces and other equipment generating heat, where aprons extending from the ceiling to the bottom chord of the roof-trusses trap heat at the outset. Rapid exhaustion of air through the roof above these units will maintain satisfactory conditions in every section of the plant.

■ G. K. Simonds, center, general manager, Simonds Saw & Steel Co., confers with J. K. Gannett, right, vice president, the Austin Co., and N. R. Crater, left, Austin superintendent in charge

Editorial

Today's Formula for Management

■ FROM a long-time reader of STEEL comes the following:

"I agree with your editorial stand that re-employment is industry's number one job but I wonder if another important fly in the recovery ointment isn't the fact that executives generally are acquiring an indifference toward their obligation to their company's stockholders.

"For instance, in our own field there isn't enough current business to satisfy ourselves and our various competitors, so we have all gone to any lengths to get at least enough business to keep the plant going and hold the organization together. Competition has forced price cutting below costs, and, insofar as we know, below the costs of our competitors. The result is heavy losses all the way around.

"But so far as I can judge, all these executives who dictate such policies are receiving good, fat salaries. Certainly, there are no visible signs that any of them have to pinch themselves.

Small, Privately-Owned Companies Usually Insist on Profit

"Surely it is clear that management is not doing its job when it fails to return a profit to stockholders over any fair period of time. We are all suffering because in so many cases management is overlooking the simple fact that business should be conducted at a profit.

"However, I don't think this holds true in smaller companies that are owned by one man or a small group of men. They are playing with their own money and don't cut prices merely to book an order and get some work in the shop. It is mainly the men who are on stockholders' payrolls who are willing to shade prices that result in losses.

"I personally believe that top executives should have their salaries cut to a minimum and be compensated instead by an incentive system based on profits. This would cause the price-cutters to see their mistakes and should have a big effect in providing more industrial activity, by attracting more capital into industry through the promise of profit. These executives would quit wailing about taxes and a lot of other things that now seem to engage their attention and they would go to work to make their companies show a profit."

Duty of Management Is To Return Fair Profit to Stockholders

This letter seems to typify a view that is held by a large number of small manufacturers throughout this country whose livelihood depends immediately on profits they are able to make out of their business operations and who are not so financially organized as to be able to sustain losses over a period. But STEEL does not pretend to pass judgment as to the merits of the argument, for the business process is a complicated one and management, however capable and soundly minded, is forced to cope with difficulties that in many cases seem insuperable. STEEL does not believe that any basic indictment of management of one type or another is warranted by all the facts.

It believes, however, that management fails, over a fair period, to return a profit on its operations, and that this is true irrespective of the circumstances in which it must function.

STEEL believes that the basic objectives of management today, in the order of their importance, are as follows:

1—The return of a profit on capital invested in the business; 2—establishment of steady employment and increased employment through product development and distribution; 3—satisfactory industrial relations.

The BUSINESS TREND

Index Steady in Spite Of Mixed Trends

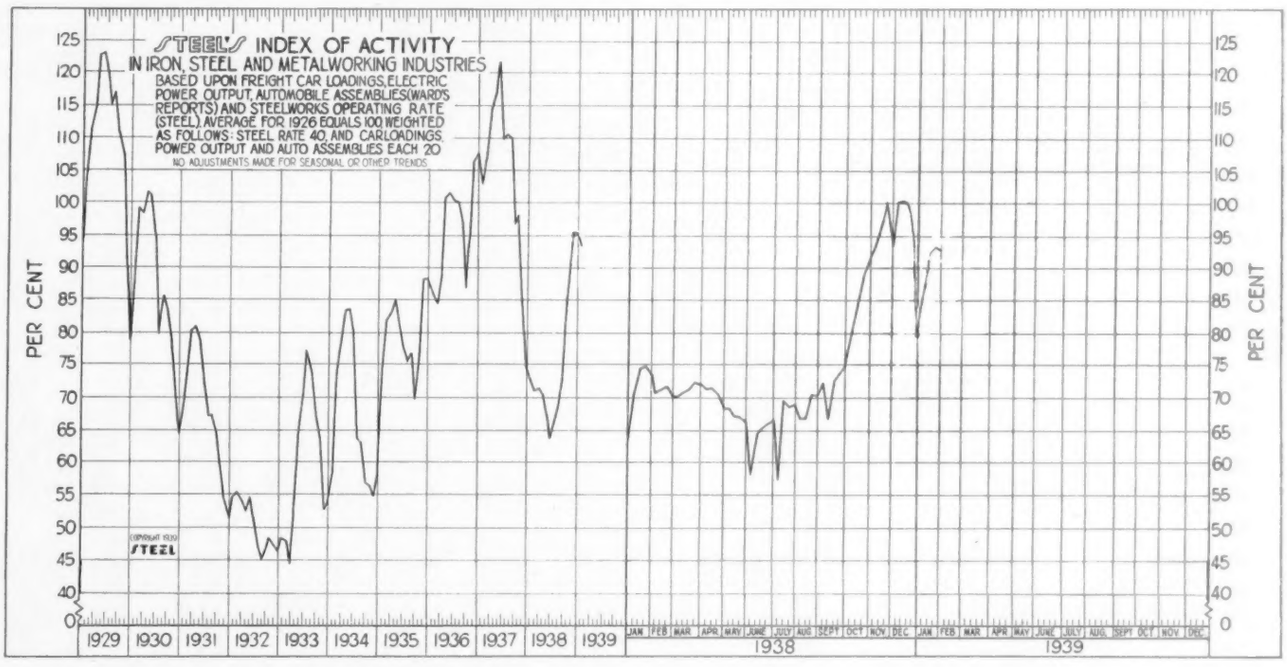
■ IN CONTRAST to the slight improvement in industrial activity usually expected in January, most business indicators during that month lagged behind the December rate. This was anticipated by many industrial leaders. A brief period of consolidation was considered a normal development following the steady advance from July to December.

No signs of a serious interruption of the business improvement of the past six months have appeared, despite the uncertainties arising from the stock market recession and complex foreign developments.

Reflecting the moderately slower pace of industrial activity in the iron, steel and metalworking industries during January, STEEL's index average of 93.3 for the month compares with 95.1 during December. It remained substantially above the index figure of 73.3 during January, 1938.

In spite of moderate gains in two of the business indicators composing STEEL'S index for the week ended Jan. 28, the index eased 0.1 point to 92.9. In the same week last year the index stood at 73.8.

Steelmaking operations remained unchanged in the week ended Jan. 28 at 51.5 per cent. A moderate im-


STEEL'S INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
BASED UPON FREIGHT CAR LOADINGS, ELECTRIC POWER OUTPUT, AUTOMOBILE ASSEMBLIES (WARD'S REPORTS) AND STEELWORKS OPERATING RATE (STEEL). AVERAGE FOR 1926 EQUALS 100 WEIGHTED AS FOLLOWS: STEEL RATE 40, AND CARLOADINGS, POWER OUTPUT AND AUTO ASSEMBLIES EACH 20
NO ADJUSTMENTS MADE FOR SEASONAL OR OTHER TRENDS
PER CENT
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939
1938
1939

STEEL'S index of activity declined 0.1 points to 92.9 per cent in the week ended Jan. 28:

Week ending	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
Nov. 12	95.9	86.5	107.9	88.8	54.9	50.7	47.7	55.5	73.0	91.6
Nov. 19	100.4	84.9	109.9	90.9	55.2	52.6	49.2	54.8	71.0	87.8
Nov. 26	93.9	72.7	105.2	86.0	54.4	55.4	44.5	51.4	66.9	80.9
Dec. 3	100.1	81.5	108.4	91.7	51.9	49.7	45.3	52.9	69.2	85.0
Dec. 10	100.7	80.5	113.9	91.8	56.8	52.6	46.6	53.1	68.2	83.4
Dec. 17	99.8	79.4	114.8	91.9	60.6	56.0	49.3	52.3	67.3	79.7
Dec. 24	94.8	69.5	98.3	77.3	64.4	58.0	46.9	46.8	52.3	64.9
Dec. 31	79.9	62.7	96.6	78.2	60.8	53.7	42.9	48.8	58.5	74.3

	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
Jan. 7	86.5	70.1	107.8	90.2	65.4	53.6	45.3	55.8	69.2	88.1	94.8
Jan. 14	91.9	74.4	106.7	89.3	73.8	58.1	48.6	56.2	72.1	91.8	104.2
Jan. 21	93.0	74.7	104.0	86.0	78.1	60.9	49.8	55.8	72.9	96.3	107.5
Jan. 28	92.9	73.8	99.6	86.5	79.5	62.3	50.8	56.2	72.9	97.4	109.8

provement in the national steel rate is anticipated for the week ended Feb. 4, but no marked gains are anticipated until March. Automobile assemblies in the last week of January eased slightly to 89,200 units, against 90,205 in the preceding week and 59,365 in the same week a year ago.

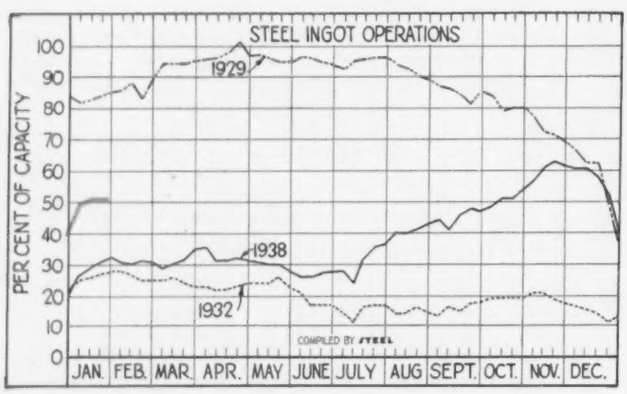
Electric power consumption during the week ended Jan. 28 again recorded an encouraging contraseasonal advance to 2,292,594,000 kilowatt-hours. The severe winter storms in some industrial sections probably will effect power output adversely for the week ended Feb. 4. Currently power consumption is running well ahead of the rate for the same period last year and weekly is setting new all-time highs for this season of the year. Revenue freight carloadings also registered a mild increase to 594,379 cars during the week ended Jan. 28, and remains well above the 553,176 cars loaded in the same week last year.

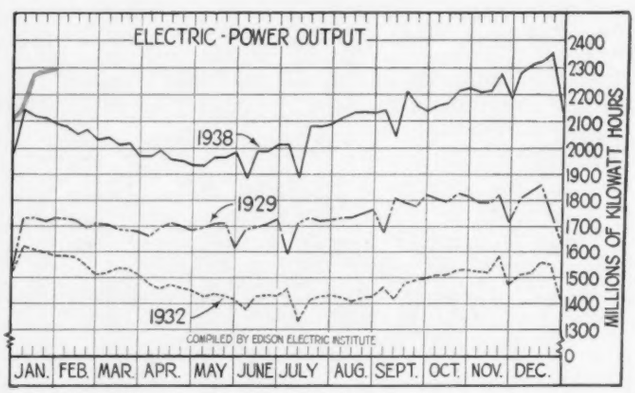
PRODUCTION OFF LESS THAN SEASONALLY

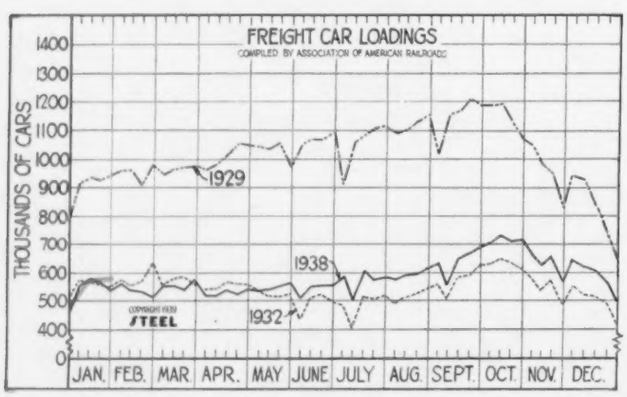
Volume of industrial production declined less than seasonally during December, according to the Federal Reserve board's seasonally adjusted index. Reflecting this condition, the index moved up one point to 104. In December, 1937, the index stood at 84. Little if any change in the volume of industrial production has been recorded for the first three weeks of January. Payrolls rose further during the 30 days ended Dec. 15 and distribution of commodities increased more than seasonally during December.

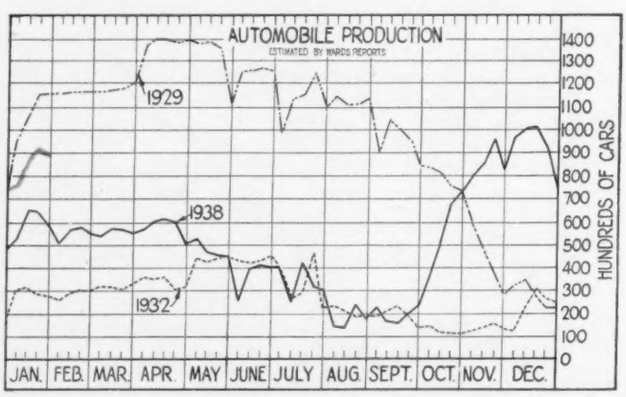
DECEMBER CONSTRUCTION AWARDS INCREASE

Construction contracts awarded during December, according to F. W. Dodge Corp., represented an encouraging gain to 48,548,000 square feet of new floor space, against 45,138,000 square feet during November and 28,718,000 square feet in December, 1937. The peak month last year was in October when construction contracts awarded represented 50,609,000 square feet. For the full year 1938 construction contracts placed totaled 429,028,000 square feet of new floor space, compared with 448,632,000 square feet in 1937. An important factor in the current rising trend in building construction is the improvement noted from private sources, particularly in the residential field. However, full benefits from the upward trend in construction awards will not be felt until the early spring months when actual work on many projects will get underway.



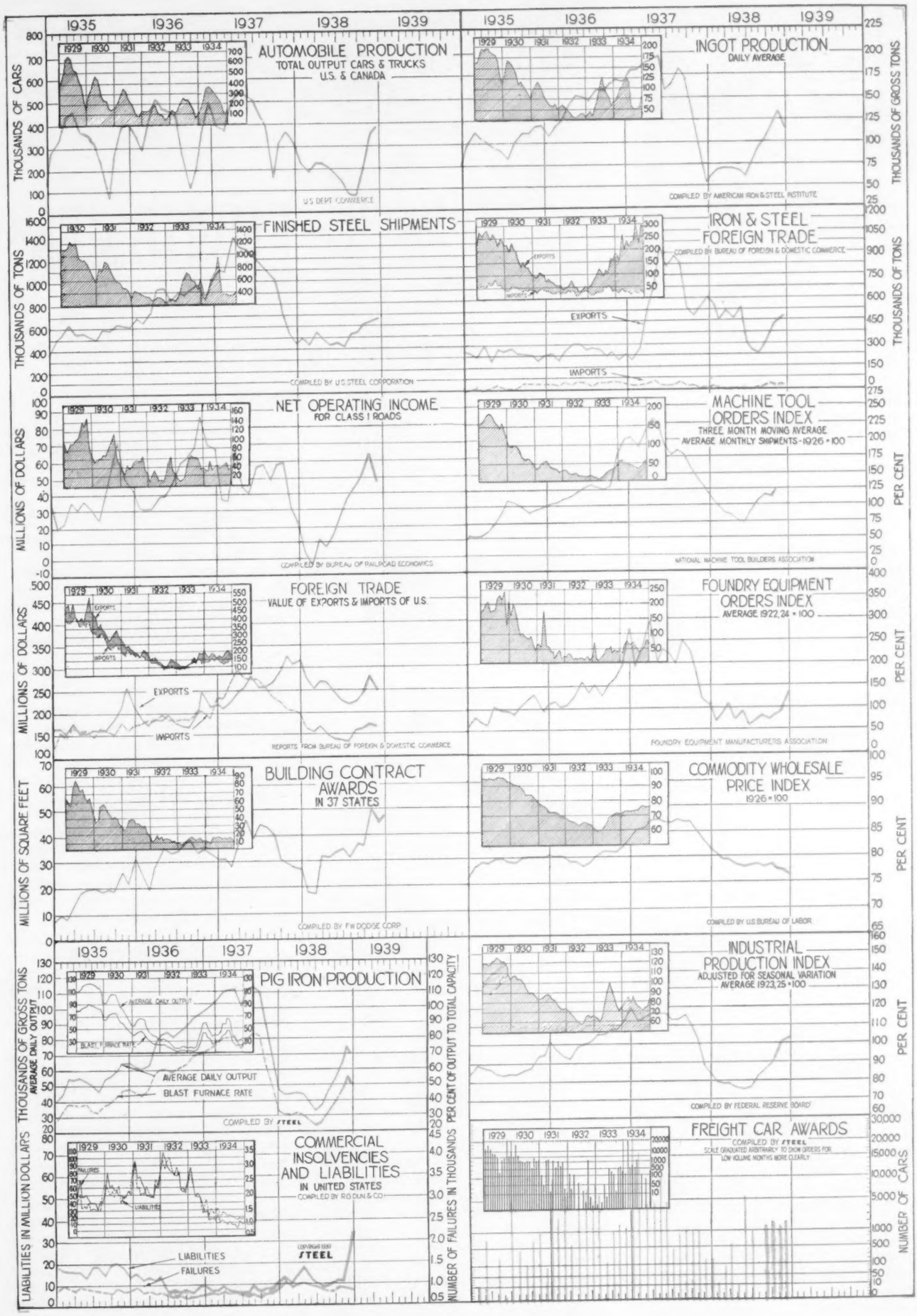




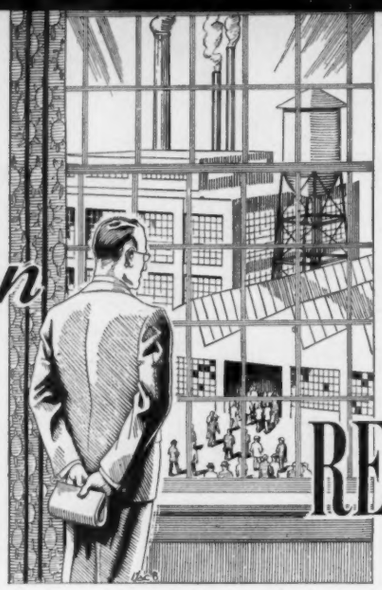


Week ending	Steelworks Operating Rate Per Cent 1938	1932	1929	Electric Power Output Million KWH 1938	1932	1929	Freight Car Loadings Thousands of Cars 1938	1932	1929	Weekly Auto Output 1938	1932	1929
Oct. 22	51.5	19.5	79.0	2,214	1,528	1,799	705	642	1,186	68,360	11,165	81,882
Oct. 29	54.5	19.5	80.0	2,226	1,533	1,824	709	617	1,134	73,335	11,117	76,870
Nov. 5	57.5	21.0	80.0	2,207	1,525	1,816	673	587	1,072	80,030	12,247	73,048
Nov. 12	61.5	21.0	77.5	2,209	1,521	1,798	637	537	1,050	86,300	13,685	61,824
Nov. 19	63.0	19.0	73.0	2,270	1,582	1,794	657	576	983	96,735	16,497	49,160
Nov. 26	62.0	17.5	71.0	2,183	1,475	1,818	562	494	950	84,930	13,389	38,219
Dec. 3	61.0	16.0	69.5	2,285	1,510	1,718	649	547	837	97,795	12,398	28,079
Dec. 10	61.0	15.0	67.0	2,318	1,519	1,806	619	521	937	100,705	21,695	31,255
Dec. 17	58.0	14.0	63.5	2,332	1,563	1,841	606	517	923	102,902	30,589	33,293
Dec. 24	52.0	12.0	63.5	2,362	1,554	1,860	574	495	843	92,890	27,396	23,216
Dec. 31	40.0	13.0	38.5	2,120	1,415	1,638	500	407	638	75,215	25,598	23,967

	1939	1938	1932	1929	1939	1938	1932	1929	1939	1938	1932	1929	1939	1938	1932	1929
Jan. 7	51.5	26.0	25.0	84.0	2,169	2,139	1,619	1,542	531	552	573	799	76,685	54,084	30,755	75,000
Jan. 14	52.0	29.0	26.0	82.0	2,269	2,115	1,602	1,734	587	580	572	914	86,925	65,735	31,416	95,000
Jan. 21	51.5	30.5	27.0	83.0	2,289	2,108	1,598	1,737	590	570	562	932	90,205	65,418	29,365	105,000
Jan. 28	51.5	33.0	28.5	84.0	2,292	2,098	1,588	1,717	594	553	560	826	89,200	59,365	28,950	115,000


AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
U.S. DEPT. COMMERCE
INGOT PRODUCTION
DAILY AVERAGE
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
FINISHED STEEL SHIPMENTS
COMPILED BY U.S. STEEL CORPORATION
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
NET OPERATING INCOME
FOR CLASS I ROADS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS - 1926 = 100
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922-24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACT AWARDS IN 37 STATES
COMPILED BY F.W. DODGE CORP.
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
COMPILED BY STEEL
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1923-25 = 100
COMPILED BY FEDERAL RESERVE BOARD
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES
FAILURES
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW-VOLUME MONTHS MORE CLEARLY
THOUSANDS OF CARS
THOUSANDS OF TONS
MILLIONS OF DOLLARS
MILLIONS OF SQUARE FEET
THOUSANDS OF GROSS TONS
AVERAGE DAILY OUTPUT
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES IN THOUSANDS
PER CENT OF OUTPUT TO TOTAL CAPACITY
PER CENT
NUMBER OF CARS

Forum on RE-EMPLOYMENT



■ TO AVOID the condition of being unable to see the forest because of the trees, it is sometimes necessary to climb a hill to get above the trees. Action along that line likewise is desirable from time to time in order properly to evaluate a mass of opinion on an important subject. It is in this spirit that this week's contribution to STEEL's Forum is presented.

There is in Cleveland a man who is more than ordinarily well fitted to sum up opinions of many important persons regarding the subject of re-employment. He is John W. Love, business editor of *The Cleveland Press,* whose daily column "Today's Business" long has been widely read throughout the middlewest.

Mr. Love is one columnist with a background of industrial and business experience, having started his career in Shelby, O., as a machine operator in a hardware manufacturing plant. He followed this up with further practical experience in a mill producing rolled and drawn steel shafting. Later he was cost accountant and advertising man with a large manufacturer of bee-keeping equipment.

In his overall survey of the employment situation, Mr. Love finds it to be a possibility that of the 10,000,000 now reputedly looking for work, many will not work if other members of their families obtain work. Others—once active in industry—have lost their interest in, and their habits of, work at the speed demanded by modern manufacturing conditions. On the other hand, he does see hope for a certain number of the unemployed in the worker training and "retraining" programs—including the case-work method for re-establishment of individuals—which have been set up by a number of industries.

—The Editors

■ I HAVE just asked a dozen men in the manufacturing industries what they think will be the fate of our 10,000,000 unemployed. It was expecting a good deal of these manufacturers, I admitted—not even the professors or the economists are risking that sort of forecast. It might be too grim for them.

Manufacturing industry's "share" of the unemployed actually is far less than 10,000,000, but most of the pressure for shorter hours and job sharing has been on manufacturing and much less of it on agriculture, trade, the professions, transportation, mining and construction. Since the New Deal and its allies seem to have been looking to manufacturers for more answers to the question of unemployment than to all the other groups put together, I thought I might as well do the same for purposes of this short article.

Two of those I interviewed doubted that there are 10,000,000 persons in this country who would go to work even if opportunity offered. Many or all of the 10,000,000 are now looking for work, it is true, but they would not all work if other members of their families got jobs. Many of the remainder never have worked regularly, and probably would not work regularly if given the chance.

Another said that a substantial proportion of the unemployed will never work again. If these are not already unemployable they are becoming so, psychologically if not physically—"and many more will become unfit to work in the next three to five years. For millions of the 10,000,000 their unemployment is permanent." This has always been true after every great shakeup in this country, this man said, mentioning the Civil war.

Avoids WPA Workers

One manufacturer said he had given up employing people of long connection with the WPA, even those with experience in his industry, "—because they have lost their interest in and the habit of work at the speed our industry runs." It is cheaper, this man said, to train new people than to risk slowing down the whole establishment by reintroducing these former workers.

Several of those with whom I talked thought business might recover its activity within a few years upon such a scale that all those persons willing and able to work could find jobs at something, particularly if the construction industry or the railroads could be restored to economic health. Construction alone, returned to its activity of the 1920's,

would go a long way toward curing the miseries of the railroads, and between them the mass of unemployment would be lowered to where scarcities of labor would show up once more. A friend of mine, with a long reputation as a liberal, added in this connection that reduction in the cost of workingmen's houses would be important.

One voiced the opinion that 10,000,000 could never be re-employed so long as the European and Asiatic outlook is so discouraging to investors. Echoing what a Chicago banker recently told me, the disturbance to international investment has been so profound that no matter how conservative the American government might become, it could not "restore prosperity" in the old sense of the word. Better to let the New Dealers be blamed for an impossible task, one informant said, than to risk the political damage sure to be done to sound policies if they were attempted now.

More Government Projects

Two manufacturers look either for a continually expanding government service which will take up many of the unemployed or advocate it. One of them was sure the government could go on indefinitely to employ people on more or less needed public projects. We might as well settle down, he said, to a long-term program of engineering works, properly planned and financed, aware that no Republican administration would seriously reorganize it, let alone abolish it.

He and one other—whom I shall quote below—said public employment is necessary for an indefinite period, but that it should be handled in such a way that its wages shall not compete with private payrolls or its completed undertakings with private employment. Both are certain that the supply of such public jobs could be made to last as long as the stream of new products in industry. There is no limit to public wants any more than there is to what individuals want.

One surprise to me was the belief of two of the manufacturers with whom I talked, that machine progress has been so rapid that the supply of jobs simply will not go round any more. That opinion is common enough, but we do not often meet it among manufacturers. One of these men was in an industry which has had little technological change, the other is in one of the metal trades. The second man is friendly to continuous shortening of hours, he said, in order that everybody, or almost everybody, could have a job, but he confessed this is not so simple a solution as it seems.

"We can turn out the necessities of life in only a few hours of work a week," he said. "We could reduce the hours of work to the level needed to produce them, and that would give a job to everybody. But how about those who want more than the necessities? Answer that one—it's your turn. Perhaps the answer lies in educating the public in the employment of its leisure time—to make the luxuries into the necessities."

(If I give less than the usual space to the discouragements to business enterprise in our taxation and the various and often conflicting

John W. Love
Business Editor, *The Cleveland Press*
Cleveland

policies of Washington, it is not that these men did not mention them, but they have been discussed in previous articles in this "Forum on Re-employment.")

Three or four of the dozen industrialists I have interviewed think that in addition to national and international discouragements to business growth, a sea change has been coming over American opinion which may assure us a large amount of unemployment for a generation or more.

One of them expressed it this way: "We need a genuine revival of the conception that if we are to enjoy things in this life we must work for them. You never see that thought expressed any more. It's gone out."

Another explained that the cadence of modern industrial work has so quickened, and with it responsibilities of individual workmen and penalties upon the manufacturer for too erratic a rate of operation, that the standard day-shift men are the only ones who can any longer be assured of steady work. "Those who are mere names on the seniority book have little chance. It has been 15 years since there was a real shortage of the semiskilled men in industry. Perhaps since then, in a few places like Detroit in the late 1920's, employers have had difficulty in getting all the macine operators they needed, but such periods have been brief. In most places in 1928 and 1929, and again in 1936 and 1937, the demand has been for all-around toolmakers and the like, never for the mediocre and unskilled."

The head of one of the largest establishments in our vicinity said all the work in his plant has become skilled work. Standards of performance have all risen—the pressure for higher wages has helped to bring that about—and now social security legislation is increasing the premium for steady work. He has two persons in his office who spend all their time seeing to it that no department takes on men it may soon lay off. Hence there is no chance for those men who used to find work there in the periods of peak operations. And so these men, the former occasional workers in industry, are now all on the WPA,—"and are likely to stay there."

National pressure for higher wages, both from labor unions and public opinion, has been successful in raising the wages of the men who are worth employing at these new wages, one of the manufacturers said, but has made it unprofitable to take on thousands who formerly could make some sort of living in industry. The lifting of wages has been placed by the tightening of the organism of production within the shop, and no amount of hours-shortening or work spreading will serve to re-employ those who cannot keep up with the men who now hold the jobs.

A Retarding Factor

To give the slow worker a chance only lowers production of the whole group. This could be tolerated only if wages were lowered all around or the old differentials of pay between fast workmen and slow workmen were restored. "Thus employment is frozen, and so is unemployment." (There are a few industries where unions are trying to get control of production for the conscious purpose of slowing it down.)

Your reporter found it difficult to carry these employers on from this point to imagining the eventual outcome of this national change—if there ever is such a thing as an outcome, or that any problem like this ever is genuinely "solved." A few think that national opinion may shift once again—it is always changing—and that men determined to work eventually will find places to work, while the others will "—somehow be taken care of."

One answer which occurs to me

(*Please turn to Page* 57)

DECORATIVE

■ THE VALUE of eye appeal is well known. It is accepted by some as the most important single consideration in merchandising competitive articles. This is particularly true of high-grade stainless steel articles which are sold in direct competition with expensive silverware. However there is one factor in stainless steel merchandising that requires careful handling if the merchandise is to have maximum sales appeal.

This factor is the extreme brilliance of the polished stainless steel surface. In large areas this may produce undesirable glare and cause the articles to appear too flashy. Thus several methods of toning down the extremely bright surface are employed by the manufacturers making such items as the tableware shown in accompanying illustrations. An etched stainless steel dinner plate is shown on edge with other items resting on a plate glass surface over black velvet. The reflection of the dinner plate can be seen clearly. Background in this picture also is black velvet.

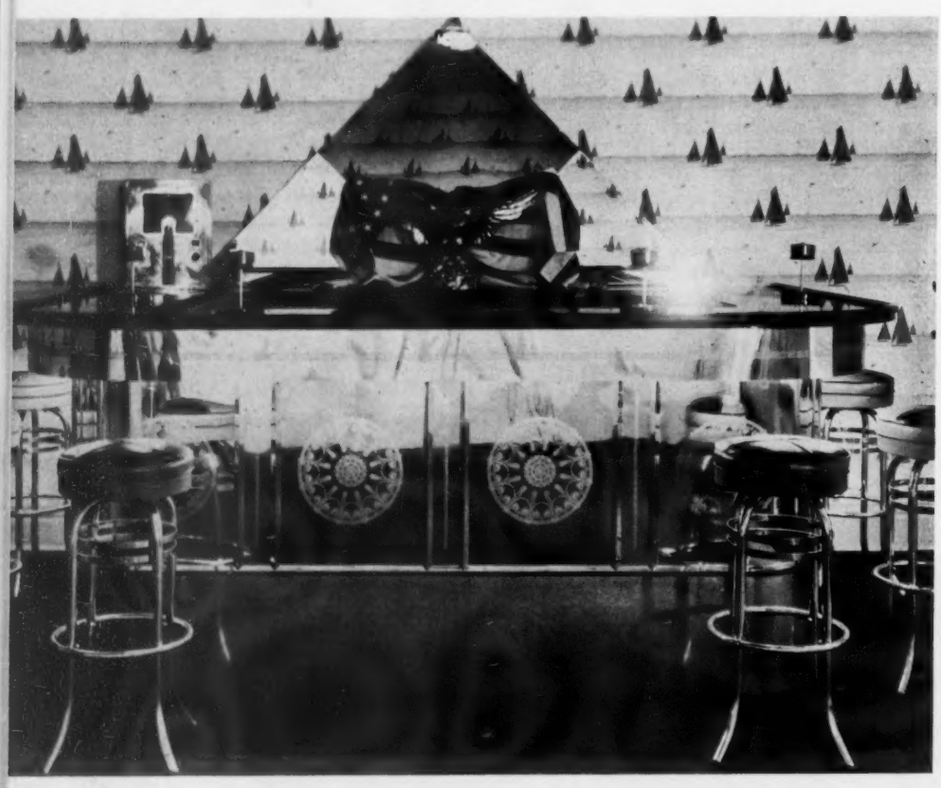
Due to its ability to remain bright and clear under almost all conditions of normal use, stainless steel long ago proved its value from a utility standpoint. Combined with present processes available for decorating the material, tableware can be produced combining striking beauty with utility.

Sharon Steel Corp., Sharon, Pa., realizing that the beauty of stainless steel can be enhanced if the monotony of its shiny surface were broken, directed its research department to seek the best methods of decorating stainless steel objects. Result of this work is seen in accompanying illustrations. This company does not fabricate stainless steel objects of any sort but co-operates with users of Sharon stainless steel in working out decorating methods best suited for their particular products. In some cases the designs are placed on the objects at the Sharon Steel Corp. plant or applied to the sheet or strip before it is sent to the fabricator's shop. Decorated stainless steel produced by this company has been given the name Sharonart metal. Designs are produced in several different ways depending on the ultimate use of the object.

Any design can be handled including lettering in type as small as 7-point. Several decorating methods can be carried out by the fabricator. Other methods can best be handled at the mill. The choice of the method is purely a matter of economics.

In quantities of one to four the familiar photoengraving method appears most practical. Here the exposed gelatin is stripped from a photo-negative and placed on the stainless steel surface which then is etched in the usual manner. The *Sharon Herald,* Sharon, Pa., has made thousands of photo-engraved plaques of stainless steel by this method in the past two years. These usually take the form of a flat steel plate with printed matter etched on the surface. These replace cast plaques at less cost and with a brilliance when polished unmatched by other materials.

At present etched stainless steel does not offer any competition for



Beautiful modernistic bar shown here well illustrates the possibilities of decorated stainless steel

Stainless Steel

Economical methods have been developed for placing fine designs on stainless steel articles in any quantity. Work can be done either before or after stamping and forming

standard copper or zinc photoengravings used in ordinary letter press printing processes.

For quantities up to 1000 exact duplicates, a hand transfer method appears most practical. Also it is the only suitable method of placing designs on irregular contours such as vases, cocktail shakers, dinner plates, etc. Also where considerable forming or stamping operations are performed on the material before polishing, this method is most suitable. Desired design is sunk into a steel plate, the plate is warmed and a suitable wax rubbed into the depression.

Following this, a sheet of paper is laid on the master plate and rubbed. The wax adheres to the paper and so produces the transfer. This transfer is placed on the stainless steel object and is rubbed so the "resist" or wax portion adheres to the metal. This provides a selective action for the etching bath as part of the surface will be protected from the acid by the wax.

Applicable to Large Work

This method is applicable also on work larger than can be handled by photo-engraving methods. In addition it is quite suitable for decorating limited quantities of flat items where its cost is cheaper than photoengraving.

Application of the "resist" is followed by etching in a 38-degree Baume, ferric chloride solution. Etching is carried on at room temperature, the usual time required being 3 minutes to produce an etch 0.001 to 0.0015-inch deep. This is followed by a water rinse after which material is given a soak in nitrate acid to passivate the surface. Then comes another rinse and a hot caustic bath which dissolves the "resist", transfer, from the surface. After washing in water, articles are dried. All articles are polished first regardless of the method employed in producing the design.

One tank, 8 x 3 x 2 feet deep, has been used at Sharon Steel Corp.'s plant for two years in connection with this work. The only requirement to renew the solution is the addition of water and hydrochloric acid to maintain the density. The tank solution is agitated by air which is blown through the solution.

Both the photo-engraving and the hand transfer methods produce articles having a dull gray background where the acid has etched the surface. Although the depth of etch in most instances is only 0.001-inch, this is sufficient to produce the beautiful design noted above.

Where a design is to be etched and the etched portion filled in with enamel, it is etched to a depth of about 0.003 or 0.004-inch. Even then the enamel does not adhere any too firmly to the etched surface so articles produced by this method are not quite as permanent as may be desired. The enamel may be applied to the etched surface by dip-

Typical items of tableware, ash tray and plaques made of decorated stainless steel

ping. A bundle of oiled paper then is employed to smear off the enamel from the upraised portions leaving the etched surfaces filled.

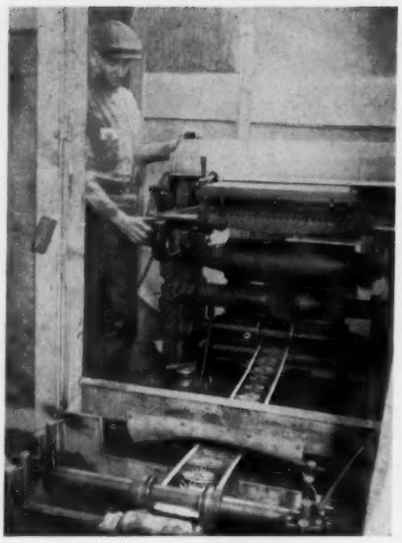
Another method employed in enameled designs is to enamel entire surface as in previous method and then use a hand sander to sand off the enamel on unetched portions of the surface when the enamel is dry. Such procedure of course produces a stainless steel surface of characteristic gray color although this may subsequently be polished if desired.

However, use of enamel filled designs in most cases is not necessary for contrast. In fact the enamel may add to the brilliance of the stainless surface and so produce an object much too gawdy to be practical. When combined with the sanded method described above the stainless does not have the bright surface and so may produce a pleasing combination in this instance.

Embossing Is Best Method

Method which appears to have the greatest possibilities however, is embossing by means of steel rolls. Such an operation utilizes pressures similar to those employed in pinch temper cold rolling and is not applicable to strip less than 0.010-inch thick. The rolls themselves are the same as employed in conventional cold rolling of steel. Rolling speeds are not critical. The design, of course, must be cut on the roll itself and this means that the process is only practical where large quantities are involved. Although this process lacks the two-tone effect produced by etching, it appears quite desirable on certain work. At the present time it is being used on material for upholstery tacks, fan blades, fan guards and moldings of several types.

This method appears most practical on metal 0.025-inch and thicker and is the most economical process where large quantities are involved. It is a highly practical method of decorating strips and sheets prior to fabrication. An objection to this method of decoration is that little contrast is produced between the raised and depressed surfaces. Since the surface is seldom embossed to a depth exceeding a mere fraction of a thousandth of an inch, the depressed surface usually maintains the same polish as the raised portion.



Printing a continuous design on a stainless steel strip

Another method giving highly satisfactory results employs a modified printing press to print the design or "resist" on the steel surface. Here the "resist" is placed on the portions to remain bright and the remainder etched in the same manner described above for the hand transfer method. This process was employed in producing the work shown in accompanying illustrations and is extremely flexible as well as economical.

When used to produce a design on material subsequently formed, such as the tableware shown, the piece is designed so the etched portion of the surface does not lie near areas which are deformed. However, a design can be placed on any portion of the surface if the deformation during stamping is taken into account. One method of doing this is to draw squares on a piece while flat. When this is run through the forming operation, the amount and position of distortion can be measured. The desired design is projected on the printing rolls to compensate for deformation so when the etched piece is formed, design appears as originally sketched.

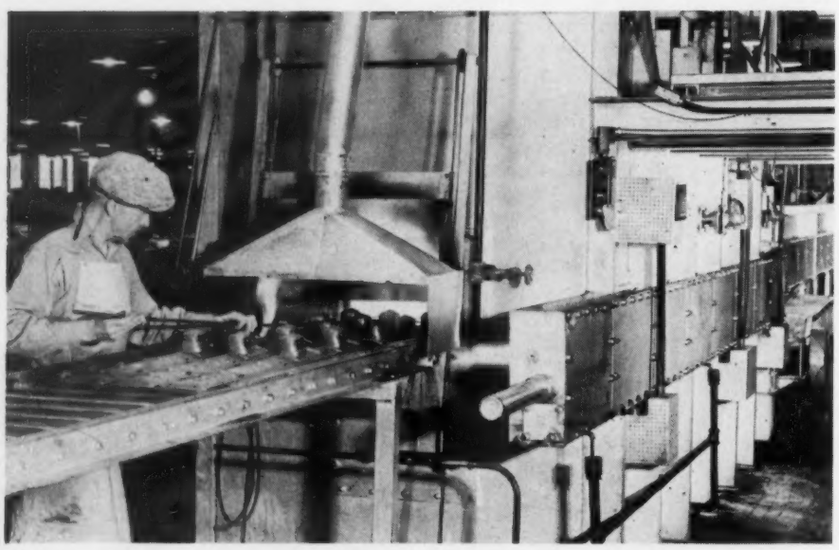
Design Lined Up

In producing the dinner plate shown, the forming operations of course have to be properly registered in the press so the formed article comes out with the design in proper position on the article. This was accomplished by printing a register line with the design along a portion of the sheet scrapped during the stamping and forming operation.

When the strip entered the blanking press, this guide line was positioned to place the design where wanted. Once a few pieces have been run through, setting stops on back of press permitted exact register without further reference to the guide line.

Another illustration shows a press set up to print a continuous design on strip. This will be followed by etching and removal of the "resist." Such designs as the one produced here are quite suitable for stainless steel scuff plates on doors, bar fronts, desk and table legs, etc. Similar uniform designs are applicable to a wide variety of uses.

Buick Brazes Breather Boxes



■ **In this roller hearth, copper brazing furnace at the Buick plant in Flint, Mich., pushrod cover assemblies are joined together. Joints include point where tube and breather box come together. Clutch-gear-bearing retainers and shock-absorber brackets also are brazed in this furnace. Advantages of copper brazing include improved uniformity, higher strength, higher quality and lower cost. Parts come from furnace free from flux and oxides with clean, bright surfaces**

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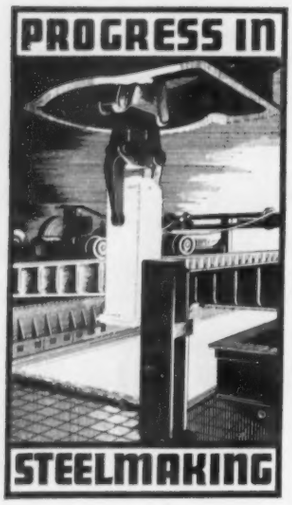


Reheating Furnaces

The 150 new soaking pits in 1937 emphasize proper soaking pit and reheating practice aids steel quality and production economy. Factors involved are detailed here

By F. D. GILLIES
and
E. D. MARTIN
Inland Steel Co.
East Chicago, Ind.

■ FOR SOME TIME it has been realized that quality of heating influences quality of steel, both in subsequent rolling and as a finished product. The need for better quality of heating has developed outstanding accomplishments in soaking pit and reheating furnace design. While a characteristic deficiency is the designing of new mills with inadequate heating capacity, this factor now appears to be receiving the attention it deserves.

For best results, quality and economy, though often opposing forces, must be driven as a team. Quality requires: That heating be uniform and a limiting upper temperature not exceeded; that heating be slow enough to avoid cracking by giving sufficient time for heat penetration to avoid large differences of temperature in the steel; that heating be accomplished slowly and carefully through temperature ranges which may be critical because of combinations of brittleness and low heat conductivity; that composition of gases, or "atmosphere," control the degree and character of surface oxidation; that proper conditions be stable and easy to maintain; and that it be possible to alter conditions to suit various products.

Economy requires: Good utilization of heat available in fuel used; low cost of labor and supervision; low cost of maintenance depreciation and obsolescence; high output per dollar of installation cost; and high production per unit of space occupied. The aim is to meet this dual set of requirements in a manner best suited to local conditions.

Potential difficulties with the customer due to shortcomings in the steel as a result of poor heating, which could pass through to the ultimate consumer unquestioned, have emphasized the close dependence of economy on good quality. Also, rolling mill operators who once felt the quality of a steel ingot could not be altered once it has been properly made, have been converted to a realization that poor reheating practice can affect steel quality.

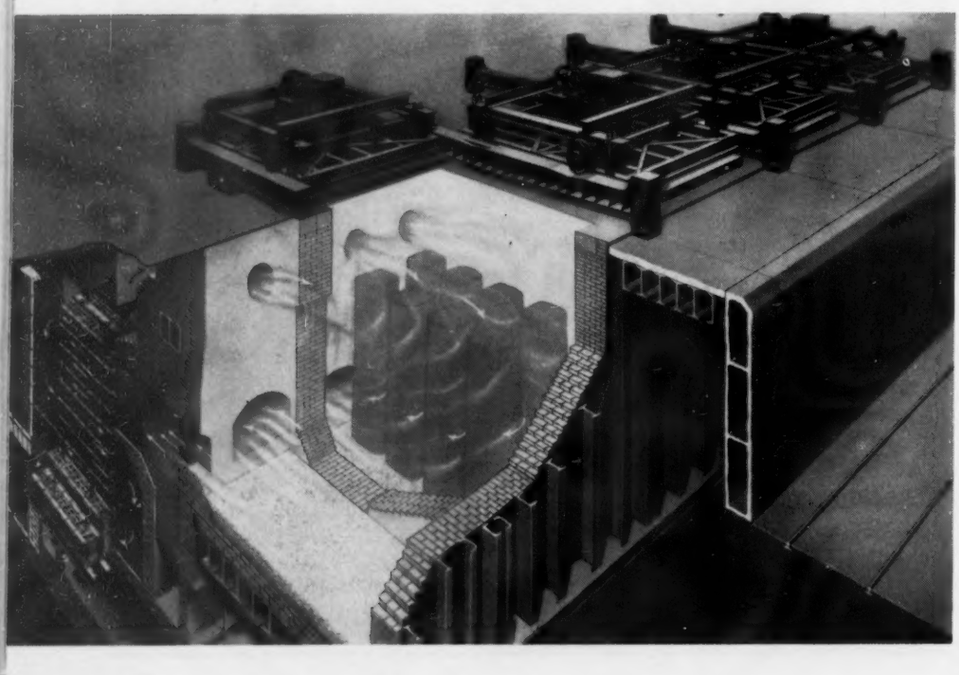
Abstract from paper presented at (British) Iron & Steel institute meeting, London, England, Oct. 26, 1938.

Forcing Heat Is Bad Practice

Failure to provide adequate heating capacity has caused pit operators to make up the deficiency by forcing heats to maintain desired rate of feed to the rolling mill. Improper heating often results under such conditions.

The underlying cause comes from not uniformly spacing delivery of heats from the open hearth. Bunched tappings in the open hearth mean some heats must stand in the open and grow cold or else the pits must be forced. Attempting to avoid mill delays with irregular delivery from the open hearth forces a bad situation on the heater.

Possibly the best way to avoid this difficulty and to assure the operator of equipment most conducive to best quality is to provide excess heat capacity. What may appear to be a needless expenditure in construction of a new mill may actually pay liberal dividends. Another practice which may tend to make quality



Typical arrangement of one-way fired soaking pits. Photo courtesy Surface Combustion Corp., Toledo, O.

suffer is use of a payment plan based on tonnage produced. Thus personnel controlling the heating facilities may be influenced to take chances in judgment which may impair quality.

Advances in fuels show a tendency toward use of blast furnace gas. Necessity of complete tightness to avoid leakage caused difficulty in the past. Experimentation with metallic recuperators appears to offer possibilities. Producer gas has kept pace with its competitors through progressive advancements in producer design and control.

Trend Toward Recuperators

In use of equipment to conserve heat in waste gases, there appears a trend toward recuperators as these operate continuously to transmit heat from waste gases through a refractory wall to the incoming air or gas. This appears more desirable than use of regenerators where heat is stored in the refractory brick during passage of waste gases, then given to the air or gas to be preheated when these are or pushed through the regenerator checker system. Alternate periods of heating and cooling in the regenerator build up recurrent movements due to expansion and retraction which often lead to cracks and infiltration of air resulting in inefficient operation. Reversals of temperature do not exist in recuperators and so uniform control of preheat temperatures may be obtained.

Metallic recuperators, while most efficient in heating transfer, appear to have lost some of the favor they enjoyed 5 to 10 years ago. Earlier difficulties of disintegration with silicon carbide recuperators seem to have been overcome by a sealing surface treatment. Recent important improvements in control and efficiency have been made possible by employing a steel encased construction to obtain wall tightness. Closures for charging and removal openings have been designed to give a tighter seal and less "open" time.

Many intricate arrangements have been designed to seal the pit cover properly. In many of the newest installations the cover rests in a sand seal and is actuated for opening by a vertical lift and then lateral travel. Economies gained by this device, which is applicable to any furnace, raise the question of why this feature has been so slowly accepted.

In reheating furnaces for blooms, billets and slabs, greater tightness and less time open have been attained by power opened, quick closing doors. Wider use of insulation also contributes to better furnace tightness and so has helped other leak prevention factors in making automatic controls practical.

Several manufacturers now have available complete control systems which permit regulating the temperature by varying fuel flow, regulating air fuel ratio, regulating the "atmosphere" surrounding the steel, controlling fuel pressure at the burners, adjusting a mixture of two or more fuel gases, regulating rate of combustion, controlling furnace pressure and making automatic reversals in furnaces of the regenerative type.

A general survey of 848 soaking pits in 14 large plants representing 62 per cent of the ingot heating capacity of the country, reveals 90.3 per cent are the reversing regenerative type, 7.2 per cent the one-way fired recuperative type, 2.1 per cent the bottom-fired recuperative type and 1.4 per cent the circular, tangentially fired type. Average fuel consumption per ton of steel rolled in the blooming mills which they serve is 1,250,000 B.t.u. Out of 31 installations, ten burn straight by-product coke oven gas, six used producer gas, five blast furnace and coke oven gas mixed, four burn blast furnace and natural gas mixed, two use oil, two burn blast furnace gas straight, one burns a mixture of producer gas and coke oven gas while one uses natural gas straight.

Of these pit furnaces 116 use full automatic control, 21 have automatic draft regulation and 96 regenerative pits are set up for automatically controlled reversals. Average life of these pits before rebuilding is 27.2 months. Average delivery time of ingots from rack molds to these pits is 1 hour, 58 minutes. Of all the steel, 8.2 per cent is charged cold.

In continuous billet heating furnaces the two-zone type, introduced in 1928, has been widely accepted in connection with wide continuous strip mills. Today this type serves all but two of the wide strip mills and easily meets requirements of temperature and uniformity of heat distribution in the slabs.

In this type, main body of furnace is top and bottom fired. In a second chamber, holding or soaking zone, the temperature inequalities induced by surface heating in the main chamber are equalized. This zone is fired from forward or rear wall by burners placed high up in the chamber. Such a furnace readily heats the large tonnage of steel demanded by wide continuous strip mills. These furnaces are well adapted to modern instrument control of air-fuel ratio, temperature and draft. Full consumption varies between 1,500,000 and 2,000,000 B.t.u. per ton depending on fuel and thickness of slab.

A recent design on a strip mill not yet in operation goes further and adds another zone which is expected to give more flexible and varying operation rates and a better balanced application of fuels.

Adopt Continuous Furnaces

Although a considerable number of sheet and tin mills still operate with old style bar and sheet furnaces, there is a definite trend toward new continuous types. Continuous furnaces have a heating chamber rectangular in both plan and section. There are three classifications, based on the means by which the pairs or sheet packs are conveyed through the furnace.

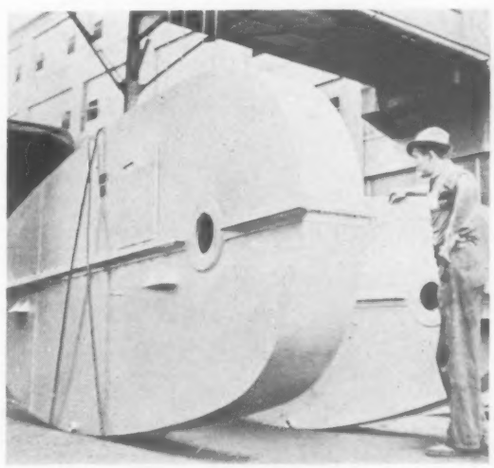
Continuous conveyor type carries sheets on top of pins projecting through slots and attached to a chain which runs under the furnace box; thus only a small part of the conveyor is exposed to furnace heat and major portion of drive moves in a comparatively cool zone. While such furnaces show longer life and lower initial cost and have accessible working parts, some claim they do not fire adequately underneath the steel.

Rotating disk type continuous fur-

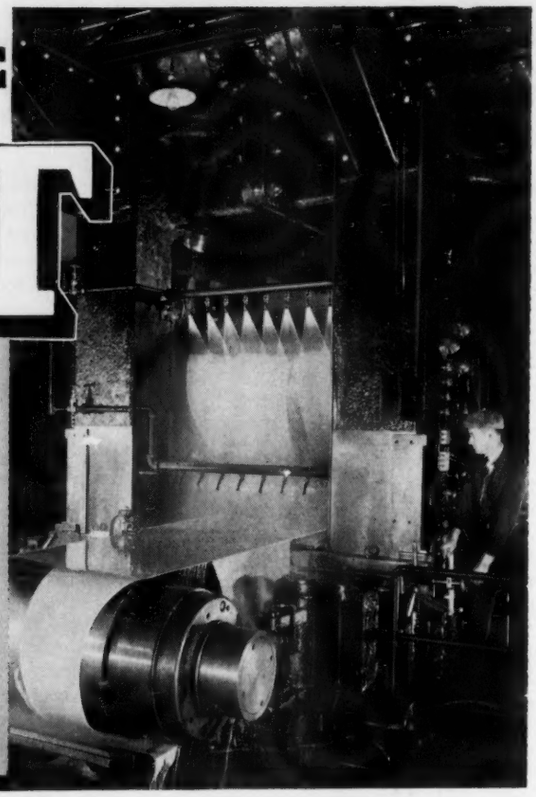
(*Please turn to Page* 56)

To Enclose Large Chain Drives

■ **Two cases like these recently were constructed to house silent chain drives transmitting 600 horsepower from a water wheel to an electric generator in two reductions. The first uses a 3-inch pitch, 10-inch wide silent chain running on 156-inch centers, the other employs a 2-inch pitch chain, 18 inches wide with 154-inch centers. Photo courtesy Morse Chain Co., Ithaca, N. Y.**



HOW TO HANDLE IT



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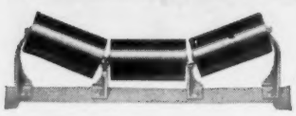
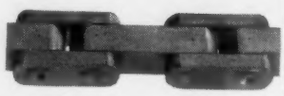
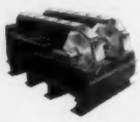


REX-STEARNS TIMKEN IDLERS



REX DRAWBENCH CHAIN



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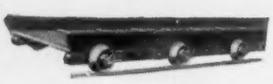

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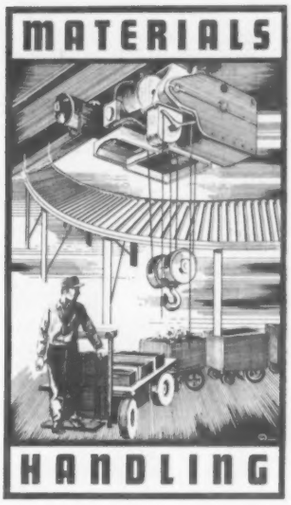


Telescoping Units

High-lift platform telescoper in nine sections points way to a new solution of how to carry men and tools to high portions of building and plant interiors

By E. W. McDONNELL
President
Economy Engineering Co.
Chicago

■ ILLUSTRATING the trend toward extremely high-lift trucks and elevating units is a special high platform design recently built for the Ford Motor Co. This machine is a motor-driven portable lifter. It is used for maintenance work on high walls and ceilings which are almost impossible to reach with ordinary equipment. The special designed unit raises a platform, on which the men work, to a height 46 feet above the floor. It safely carries two men with tools and equipment.

When the lifter is closed or is in its lowered position it has a minimum height of 8 feet 9 inches. This is low enough to permit the entire machine to be moved through doorways, small aisleways and close to machines about the plant. Fig. 1 shows the lifter with the working platform a few feet above the extreme lowered position.

Has Overhanging Platform

The platform is of the overhanging type which permits the workmen to walk out to the end and easily reach otherwise inaccessible places. In Fig. 1 where the platform has been lifted just a few feet it will be noted there are two tubular brace rod extending from the overhanging end of a platform back to the tower base. These are bolted in place after the first section of the telescoping power has been lifted high enough.

As will be seen in Figs. 2 and 3 the platform is lifted by succeeding sections of the telescoping framework rising out of the nesting position. There is a total of 9 nesting sections. The platform is lifted by an electric motor drive located in the center of the lower frame. Operation of the motor is controlled by pushbuttons mounted on the platform railing and easily accessible.. The main frame is structural steel, and telescoping frames are aluminum. Since all telescoping frames, platform frame and railing are of aluminum, the machine is light enough to be moved around with little effort. This lightweight of the sections lifting the platform also accounts for the fact that a one-horsepower motor is sufficient

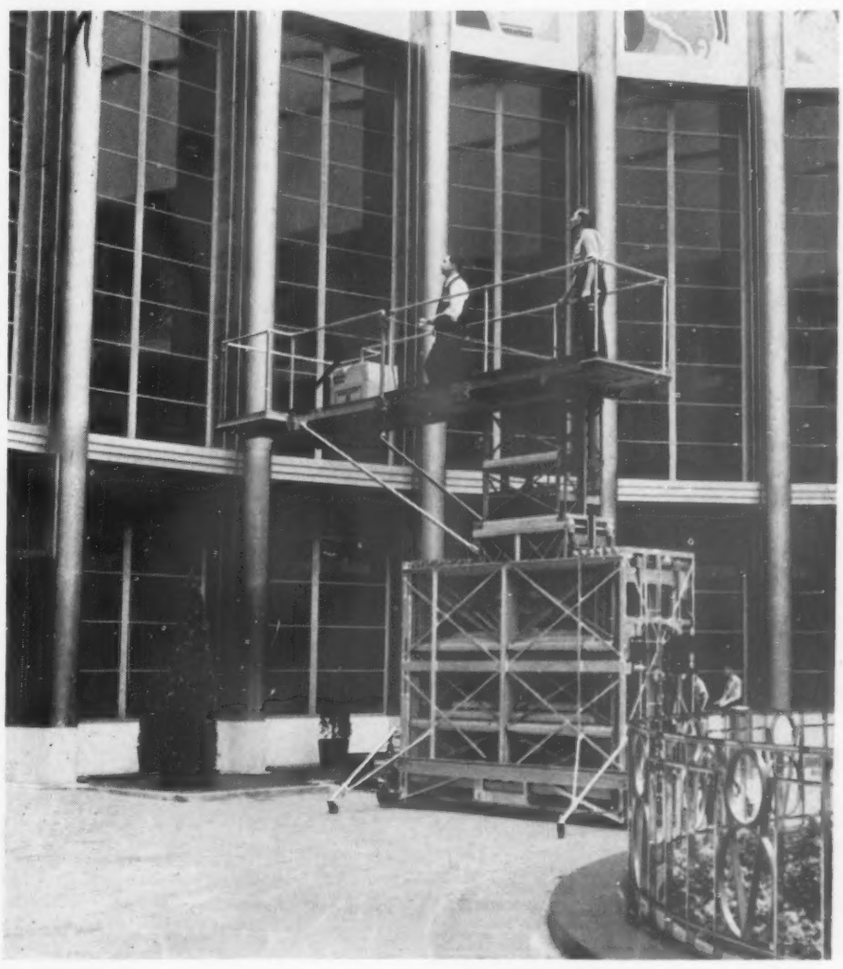


Fig. 1—High-lift platform unit with first section raised and with diagonal bracing tubular members in place

to raise the platform at a speed of 6 feet per minute.

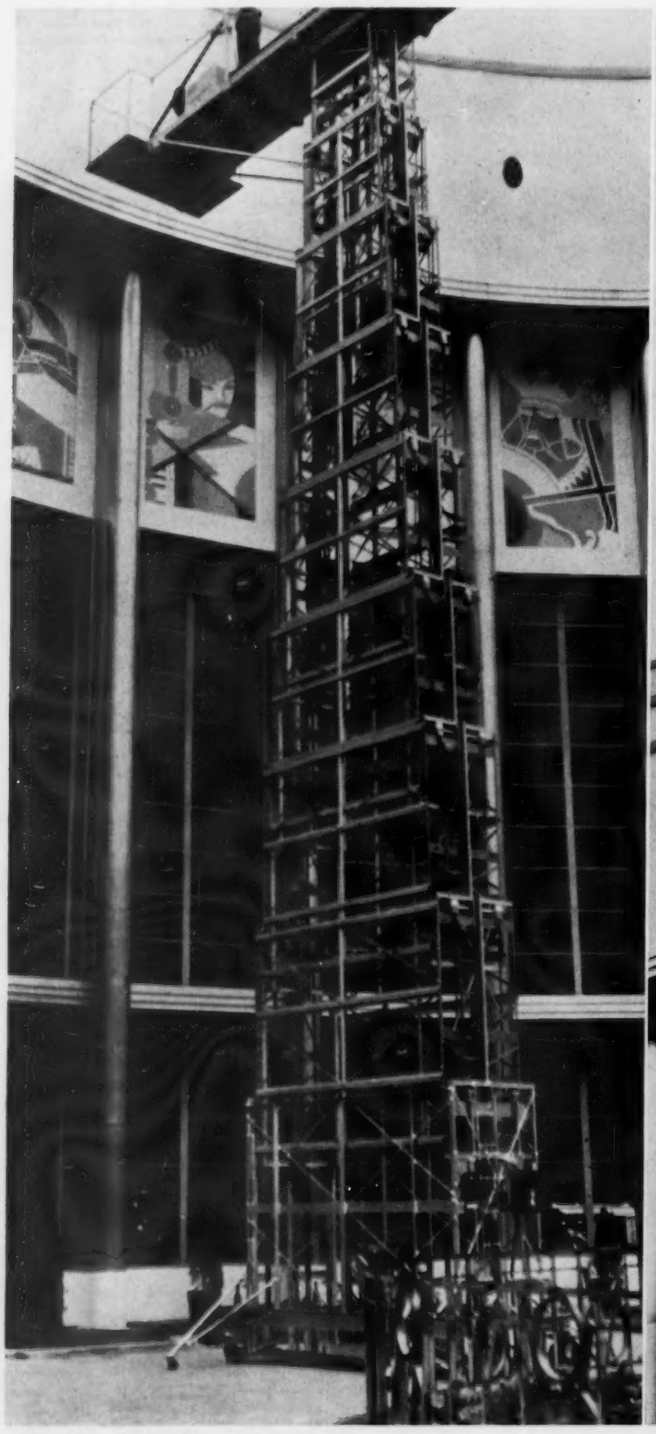
When the tower is in use, outriggers at each of the four corners are placed in position and adjusted to floor level to enlarge greatly the effective supporting area. Turnbuckles on the bottom member of these outriggers afford ready means of adjustment.

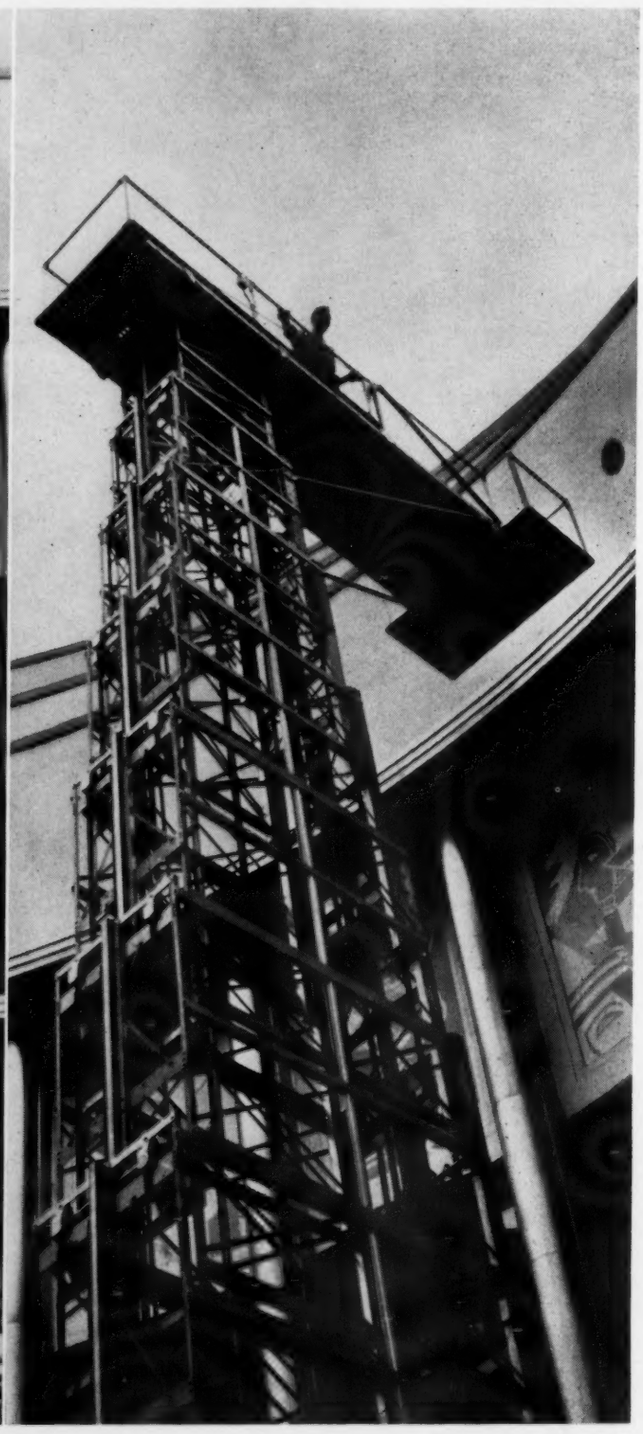
Lifting of the unit is handled by cables threaded through sheaves in such a manner that, starting with the smallest, each section rises to its full height before the next section begins to rise.

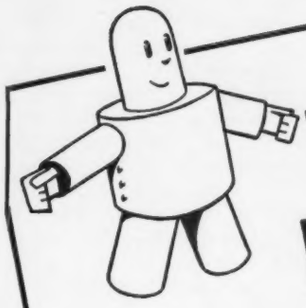
Guide rails on both ends of each of the sections stabilize the entire structure. This is most important as, with a total height of approximately 50 feet and 9 sections forming the structure, accurate guide rails are the only means of stabilizing the unit.

There is an increasing number of such units being built. Possible applications of these high platform lifters are expected to develop in a number of lines including erection, remodeling, maintenance and many similar applications where an effective and safe platform for workmen is important in working on overhead structures.

Fig. 2. (Left)—Telescoping unit in maximum raised position with platform 46 feet above floor level giving an effective working height of 50 feet. Fig. 3. (Right)—Closeup of tower showing guide rails at ends of each section, making the unit rigid even in fully extended position







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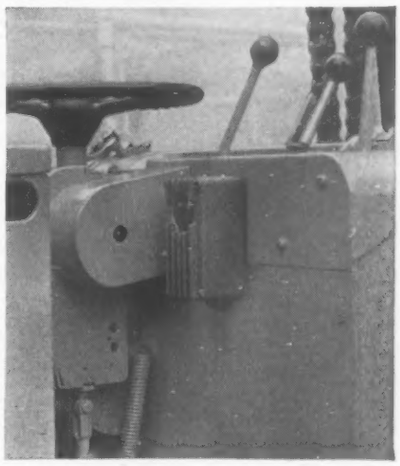
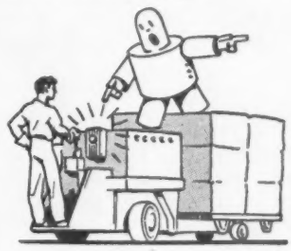
now guards the performance of electric industrial trucks

A new battery discharge and charge control system that



SIGNALS WHEN A BATTERY NEEDS RECHARGING



THE Exide Robot Battery Tender is a new discharge and charge control system embodying two recent Exide developments—the Exide Discharge Indicator which mounts on your electric truck, and the Exide Charge Control Unit which is installed on your charging panel.

The Discharge Indicator flashes a red signal-light from the truck when the battery is approaching the discharge point and needs recharging or replacement with a freshly charged battery. No longer can your trucks "drag their feet" or run low in power without warning.

The Exide Charge Control Unit automatically controls the recharging of any Exide Motive Power Battery of any number of cells up to 66, and can be used for either two-rate or taper charging. All that is necessary is to insert the charging plug and reset the control knob on the unit. A white signal-light on the unit flashes on, indicating that charging has begun.

At the proper point, the unit reduces the charging rate—automatically. And when charging is complete, the white light is extinguished and a green light appears. This is your "go" signal, meaning that the battery is ready for service and that the charging circuit is available for another battery. These two new Exide developments mean a real improvement in electric truck performance which will result in better material handling and lower cost. Write now for further details.

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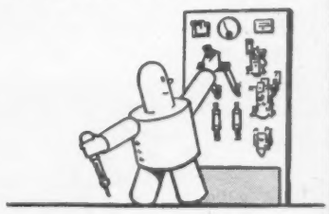

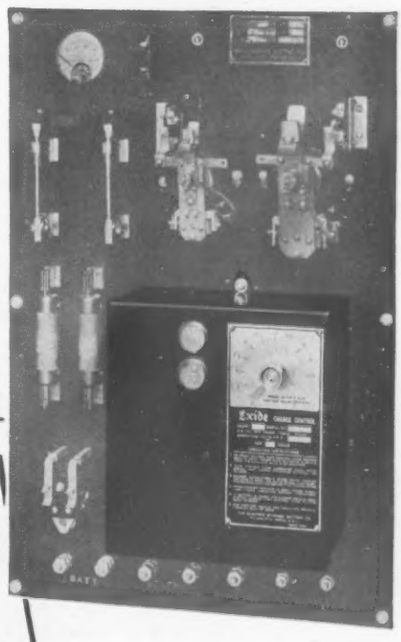

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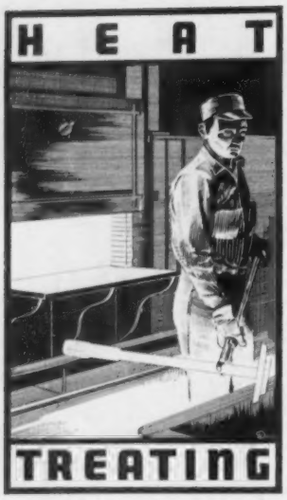


Implement Parts

New compact, automatic installation consisting of hardening furnace, oil quench and air drawing furnace effects economies in heat treatment of a wide range of specialized parts for farm and garden tools

By JACK P. WILSON

Design Engineer, Industrial Furnace division, Philadelphia Drying Machinery Co., Philadelphia

■ NEED for increased production in its heat-treating department recently made it necessary for the S. L. Allen Co., Philadelphia, to acquire new equipment. In connection with this modernization, a number of problems were presented by the type of work to be handled, results required, and location of equipment. Furthermore, the set-up was to be as automatic as possible to require little operating attention.

Work to be heat treated is specialized parts from the company's farm and garden tool department, manufactured from cultivator steels. Pieces vary widely in shape, size and thickness. Ranging from plow sweeps and harrow disks to cultivator steels and hoe teeth, the pieces run in sizes from 20 x 24 inches down to 1 x 4 inches, and in thicknesses from ⅝-inch down to 16-gage.

It was necessary to put the new equipment in the general floor space occupied by the old and to take advantage of as much of the crowded space as possible. The new set-up was to produce an exacting uniform hardness with minimum scale and a proper uniform draw. The need for increased capacity also was to be met by a more economical rate of production in pounds of heat-treated work per B.t.u. fuel input.

In designing equipment which would satisfy these requirements, the Philadelphia Drying Machinery Co., Philadelphia, determined that hardening, quench and draw equipment built as separate units and combined to make one complete heat treating installation would meet all conditions to best advantage. The desired flexibility, necessary to handle the differing pieces of steels, is obtained through use of a temperature control system accommodating all types of steel, a proper design of conveyors for handling the various shapes, and variable-speed controls on the hardening furnace, quench tanks and draw furnace.

The equipment, built for long life, is entirely automatic. Temperature controls and motor drive controls are mounted on a central panel. Only one man is necessary to handle production through the installation, and his time is utilized in charging the work to the hardening furnace and removing the loaded bins from the discharge of the draw furnace.

Equipment Arranged in "U"

Furnaces and quench tanks are built in a U-shape with the controls placed in the center of the "U." This arrangement takes best advantage of available floor space and at the same time offers no hindrance to the flow of work. Fired by oil, both furnaces are equipped with automatic temperature control. The hardening furnace is of a design to give maximum uniform radiation to the work; the draw furnace is of the air-draw type. To maintain the quench bath at proper temperature,

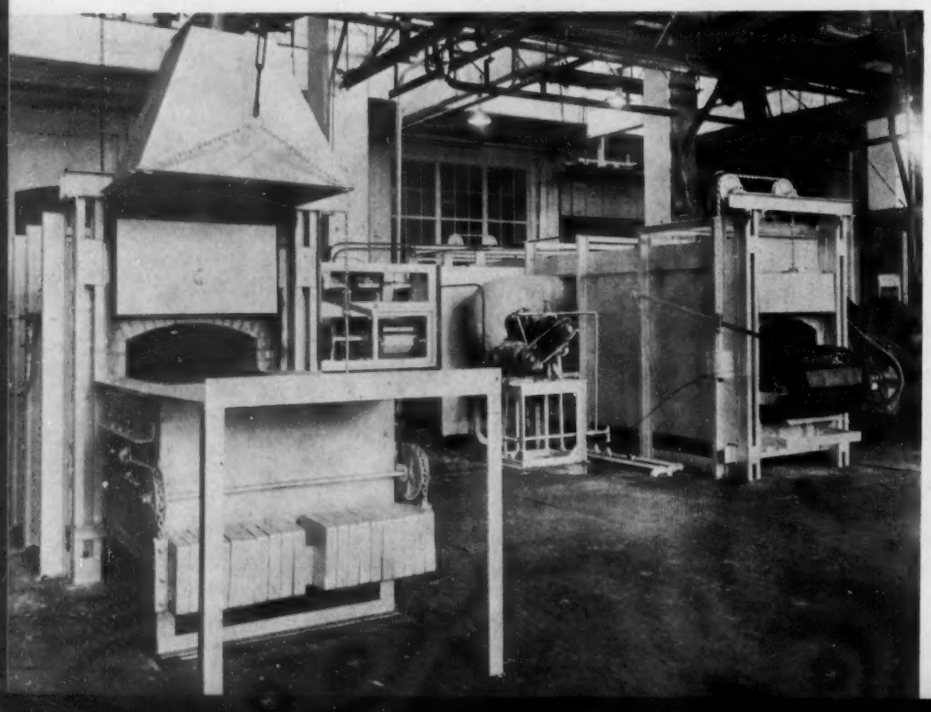


Fig. 1—Charging end of a controlled atmosphere furnace which bright anneals cold rolled strip continuously. This unit handles widths up to 30 inches. Wider widths are handled in similar furnaces

the oil is passed through a recirculating cooling system.

Economies are being derived from the new installation. Through utilization of burners of proper design and size, fuel oil consumption is kept at a minimum; likewise, through use of low-horsepower drive units on conveyors power requirements are decreased. Furnaces are well insulated to cut down heat loss, and because they are automatic they have reduced labor cost. These factors have effected low-cost heat treating and an increased production rate for the department of 1200 pounds per hour.

Overhead Crane Used

Parts to be heat treated are carried in a box by an overhead crane to the loading platform of the hardening furnace, shown at the left in Fig. 1. Here the operator dumps the load and distributes it uniformly over the charging conveyor. Work is carried through the furnace on the conveyor and is discharged at the rear, Fig. 2, through the furnace floor by a chute which leads directly into the oil quench below floor level. In the quench tank, the work is directed properly onto the conveyor by guards and is carried up and out of the tank and discharged automatically onto the draw furnace conveyor, at the left in Fig. 3.

At the unloading end of the draw furnace, shown at the right in Fig. 1, the work discharges from the conveyor into rolling bins. The operator replaces bins as they are filled. All of the various sizes and shapes of parts may immediately follow each other with no change in the flow of charge through the installation.

Hardening temperatures range between 1500 and 1600 degrees Fahr., consequently the hardening furnace is built in a welded steel casing of plates stiffened by structural members, and is lined with 2000-degree Fahr. insulating refractory brick backed by insulating brick and block. Direct firing is employed, using eight low-pressure oil burners of the builder's own design.

Heat-resisting alloy spiralink conveyor and drive drums, furnished by the General Alloys Co., Boston, are used for the furnace conveyor which is connected by a rugged chain to a drive consisting of a motor, reducer and variable-speed unit. The conveyor is equipped with an automatic take-up to handle expansion of the belt when at temperature. A heavy cast-iron charging table at the entrance end of the furnace provides adequate room for loading work on the conveyor.

A feature of the alloy quench chute, Fig. 2, is a safety control attachment which will shut down the conveyor automatically if the work is not being handled to the quench properly. A water-jacketed steel chute between the alloy chute and the quench tank effectively reduces radiation from the furnace to the quenching oil.

A large, strong, welded steel tank, placed below floor level and covered with steel floor plates, has sufficient oil capacity to assure adequate quenching. The oil cooling recirculating system discharges its cooled oil into the tank below the surface level and directly at the discharge chute from the hardening furnace. Oil is removed from the tank near the point where the work has given up most of its heat.

The quench conveyor, Fig. 3, is carried on a frame of structural members so designed that the conveyor can be removed from the tank as a single unit. Guides and guards for directing the work onto the conveyor also are removable. The conveyor itself is of the steel plate type equipped with flights and drainage parts. The conveyor has the same type of drive unit as the hardening furnace conveyor and also has a take-up.

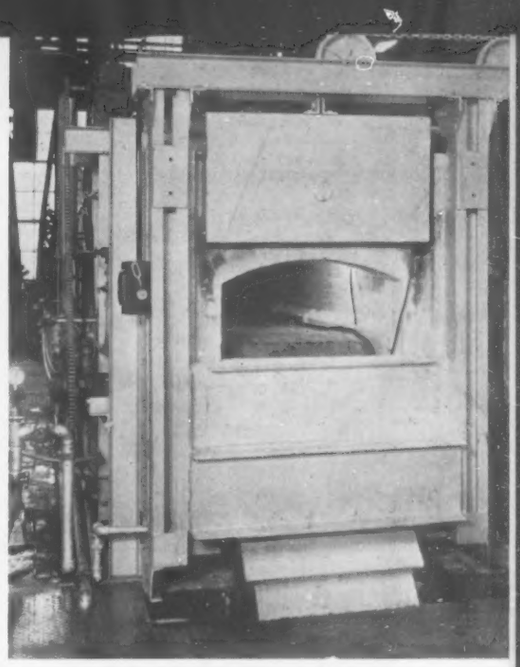


Fig. 2—Work is discharged from the hardening furnace into the submerged oil quench through an air-jacketed alloy chute passing through the furnace floor

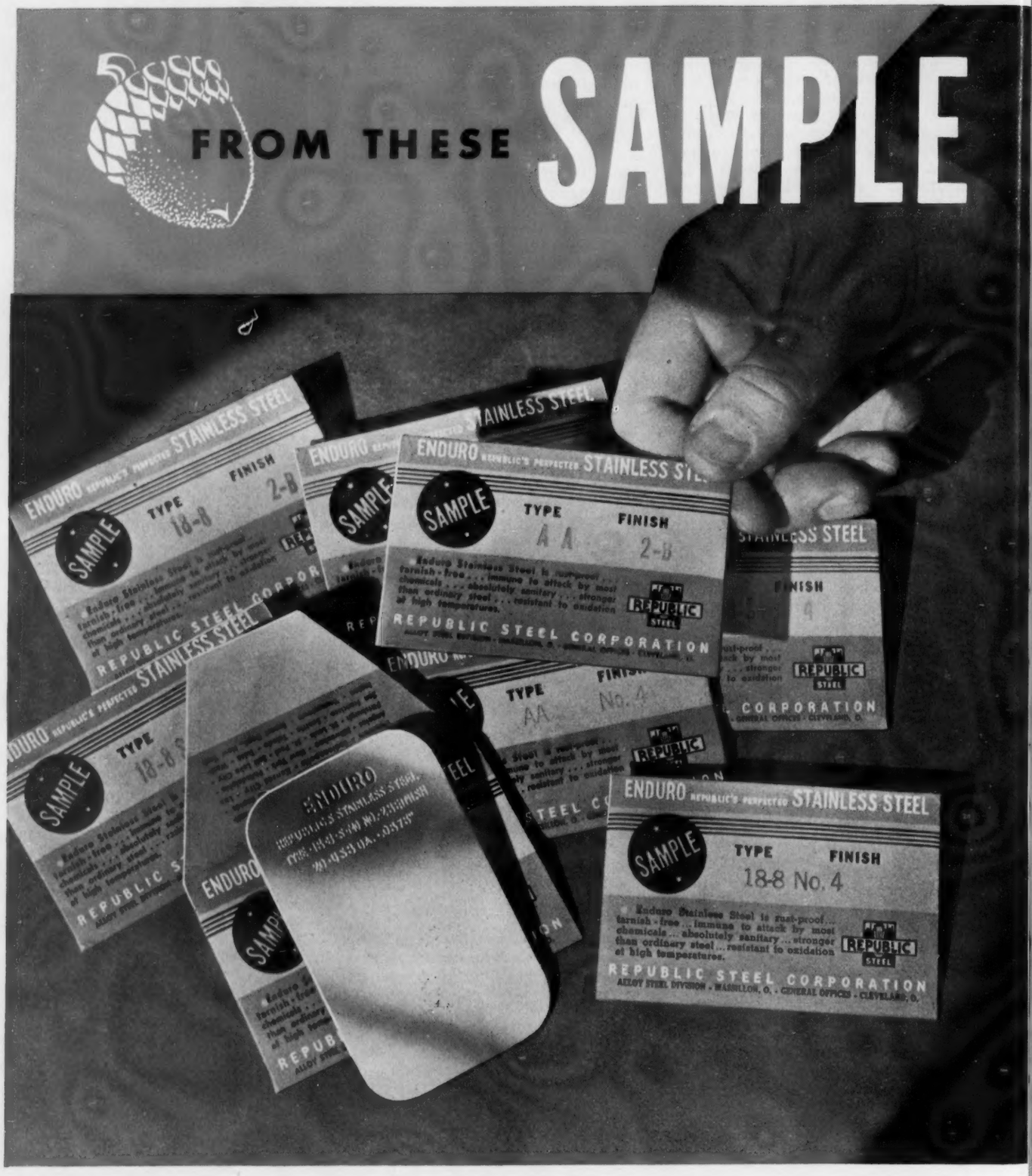
At the top of the quench tank conveyor, where the work is discharged onto the draw furnace conveyor, a specially-designed curved chute is provided to distribute the work evenly on the draw furnace belt and to prevent damage to the work in dropping from one conveyor to the other.

Drawing temperatures range from 650 to 850 degrees Fahr. The draw furnace has a welded steel casing similar to that on the hardening furnace and is lined with insulating refractory brick and insulating block. In addition, a welded steel casing, lined with high-temperature refractory brick and high-temperature insulations, is incorporated as a combustion chamber for heating the air. This chamber is built in conjunction with the furnace proper and is directly connected to it by a lined duct to the bottom of the furnace.

This chamber is fired by two of

(*Please turn to Page* 57)

Fig. 3—Removed from the quench tank by conveyor, work is discharged automatically on the conveyor of the drawing furnace. Air heated by two oil burners and circulated by a fan heats this furnace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Envelope size samples for corrosion testing and to show the different finishes will be mailed upon request—samples that may open your eyes to new profit possibilities.

ENDURO is made in sheets, strip, plates, bars, wire, tubing, bolts, nuts, rivets and welding rod. Corrosion or heat-resisting analyses.

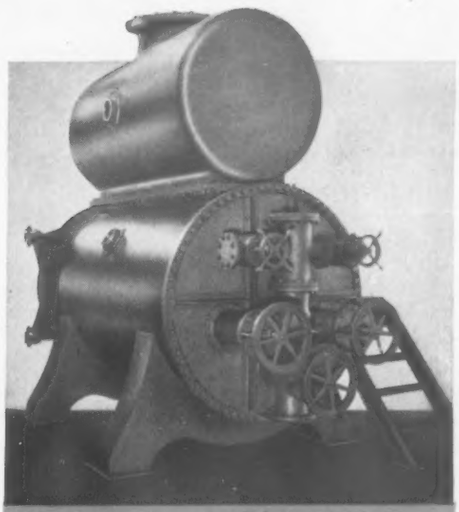
SEEDS GREW PROFITS FOR MANUFACTURERS OF THESE *Enduro** STAINLESS STEEL ITEMS—

A maker of dyeing equipment for textiles was concerned with complaints when certain dyes were used in his product—a sample of ENDURO in a test model proved that all such complaints could be eliminated—and led to trouble-free sales.

A maker of cooking utensils experimented with ENDURO Stainless Steel and built a thriving business during depression years.

Automobile manufacturers are constantly finding new uses for this rust-resisting metal and using its beauty to win buyers.

Maybe you have been looking at your product through your own eyes too long instead of through your customer's. Maybe complaints on your equipment are handled in another department and you don't see them. Maybe you don't get into users' plants to see what your competition is doing to cut into your sales. Maybe a friendly discussion of your product and its uses with a Republic representative will show you how ENDURO Stainless Steel will help you—to make a better product—to beat competition—to make more sales.



A modern evaporator in which Republic ENDURO was used for practically all parts.

Inside and outside of this pressure pasteurizer are ENDURO.

Hospital utensils of ENDURO, unknown a few years ago, now fast-selling items.

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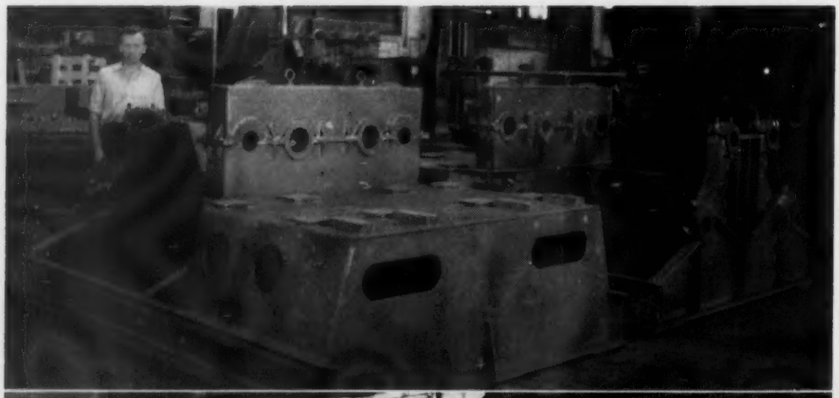
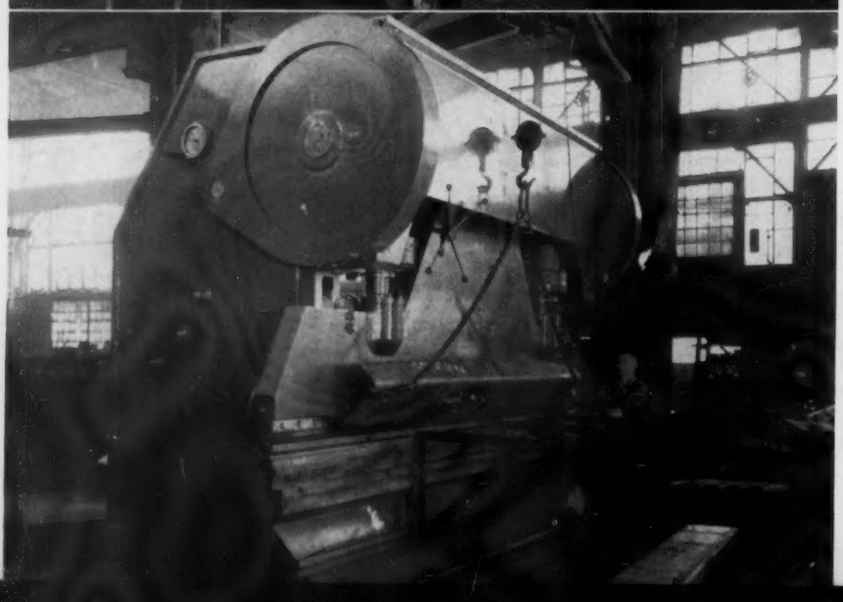
When writing Republic Steel Corporation for further information, please address Department ST.

Welds vs. Bends

Substituting a single bent plate for a number of welded flat plates gives smoothly rounded corners, increased strength and lower cost. Likewise important decreases in working time are achieved, permitting much greater output





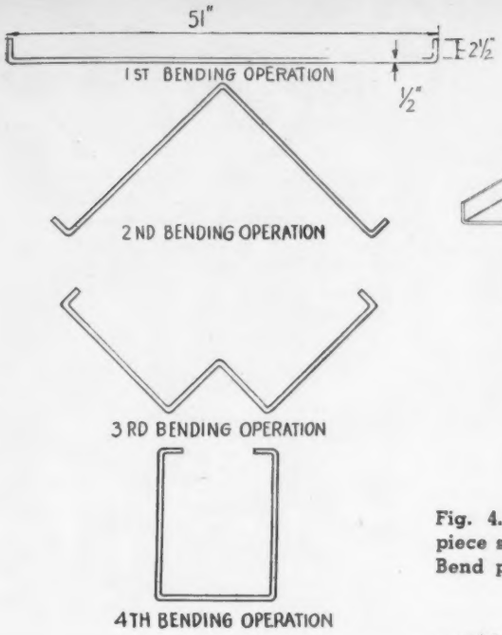
By A. E. GIBSON
President
Wellman Engineering Co.
Cleveland

■ THE COMMERCIAL success of a fabricated production is predicated on design, this in turn depending upon efficient engineering. No shop, regardless of the efficiency of its workmen or its tools, can offset expensive design.

In those welded structures which have proved outstanding successes, scrutiny of details shows constructive thought unprejudiced by previous experience or older methods of production. The factors governing cost of preparation or shaping of metal and determining welding time are determined by the detail design. In most structures fabricated by welding, surface continuity is interrupted by changing planes of metal. This has been accomplished in the past by using a number of flat plates welded together to obtain the desired shape, a costly procedure because of the welding labor required. Also it often results in a total cost that is noncompetitive with other methods of construction.

Today industry is faced with high labor rates and little likelihood of their being substantially lowered. The only possibility of cost reduction lies in the ability to reduce the

Fig. 1. (Top)—More than 54½ feet of welding in each of these gear cases was omitted by bending plate. Fig. 2. (Center)—Four strokes of a press eliminate 27 feet of welding on each of these doors. Fig. 3. (Bottom)—A welded brake bending ½-inch plate. Photo courtesy Steelweld Machinery Co.



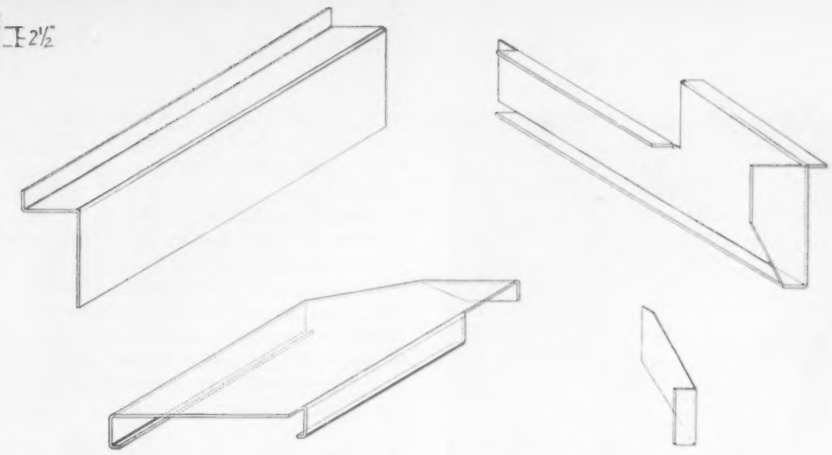


Fig. 4. (Left)—Bending operations for piece shown in Fig. 6. Fig. 5. (Right)—Bend plate used in steel frame. Fig. 8

time required. The most effective means to accomplish this is through designs utilizing tools to obtain the desired result in shorter time.

Manufacturers of bending brakes have provided a tool which can greatly reduce labor hours. Examples are rife where welding time has been tremendously lessened by bending a plate instead of welding two or more plates to obtain the desired shape. Then too, in many instances a bent plate makes possible a substantial increase in strength and rigidity, and at the same time a marked decrease in weight. Smooth rounded corners, produced by a plate brake are more pleasing in appearance than sharp corners obtained by welding two plates together. Rounded corners are particularly desirable in such equipment as machine tools where good appearance has a sales advantage.

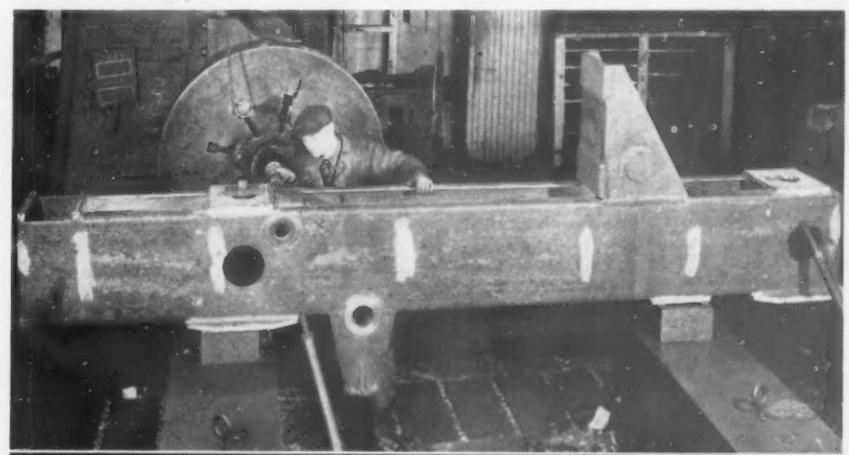
Saves 54 Feet of Weld

A striking example of bending is shown in Fig. 1. The reduction case and bed plate shown has a total of 54 feet 7 inches of bending in each unit. The elimination of over 54 feet of ½-inch butt or fillet weld resulted in a large saving in shop cost, as will be evident to anyone familiar with the comparative time required to bend and to weld.

Fig. 2 illustrates an efficient design in sealing plates, manufactured in lots of 275 at a time. The part is made of ¼-inch plate, 28 x 12 2½ inches long. It is bent into a trough 2½ inches high. Four strokes of the plate brake eliminated 27 feet of welding which would be required if the part had been designed with a bottom and four side plates.

It is of interest to note that the four corners are rounded to a 1½-inch radius. This necessitated an intricately shaped gas cut at the four corners. After the sides had been bent, the rounded corners were formed by hooking a former over two sides and hammering the extended side around the former. This operation was done by hand and took but one minute per corner. In Fig. 2 the operator is welding the top outside. He then welds the lower inside, after which the plates are reversed end for end and the procedure repeated.

Fig. 3 shows a ½-inch plate, 11 feet 2¼ inches long, being bent into



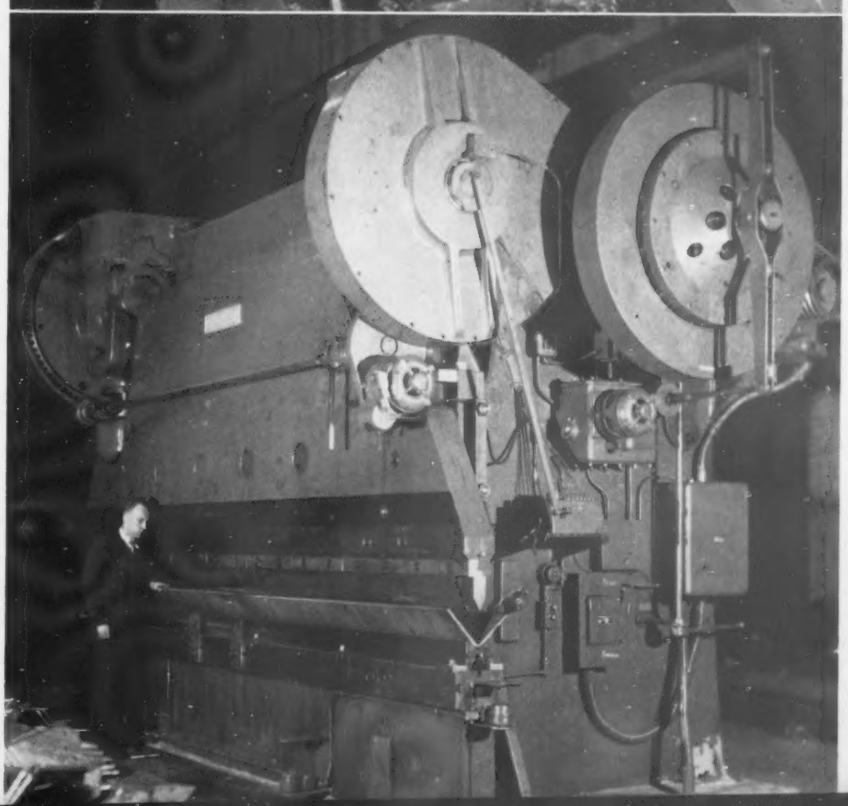


Fig. 6. (Upper)—Frame formed in bending brake in four stages shown in Fig. 4. Fig. 7. (Lower)—One of largest in America, this brake bends 1-inch plate, 12 feet long. Photo courtesy Cincinnati Shaper Co.

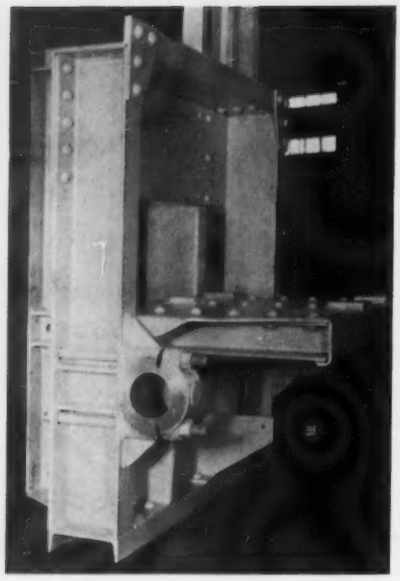


Fig. 8—Frame combining rolled sections and bent plates shown in Fig. 5

a channel shape on a plate bending brake. Two strokes of the brake accomplishes the same result as 22½ feet of ½-inch butt weld, if the part had been made of three plates welded together. Also it is done in but a fraction of the time required for welding. With proper gaging of the plate in making the second bend, close tolerance in width is easily obtained.

Another interesting example of cost saving by bending is shown in Fig. 4. This part is the frame of a self-sealing coke oven door extractor head. It is a box section with one side partially open. It could have been fabricated of five plates welded together but this would have necessitated 50 feet of ½-inch butt weld. Forming it on a press from one plate not only produced a minimum cost but greatly improved the appearance. From the shape of the part, it is evident that the four bends could not be made without an expensive and special upper die in the press. Therefore, an additional bend was made in the bottom and later pressed out as shown in the accompanying sketch of bending operations, Fig. 4.

Considerable study was made of the detail shown in Fig. 5. This is a supporting frame for an electrically operated gate mechanism. Twenty-eight frames were required. The shelf detail with four pads for supporting the motor was built up and the pads were machined before this part was assembled into the unit. This permitted ganging the parts on a planer and thereby reduced the machining cost. The four cast steel bearings had the cap tongues machined before being welded to the frame. Fig. 6 is a sketch of the bent plates used in the unit. A total of 18 feet 10 inches of bending was made in each frame.

Occasions arise where it is necessary to bend heavy steel sections to so sharp a radius that the metal will rupture if done cold. Provided the plate is not too large, it is practical to heat the plate before bending. In many instances the heating is done locally where the bend is to be made. In the Wellman plant, oil fired ovens concentrate the heat to a width of 4 to 6 inches. This permits much less troublesome handling of the plate, and the added expense of heating is low when a fair quantity of parts are produced.

The examples of bending cited above are but a few of the many details made with the use of a bending brake at the Wellman plant. The engineering department instinctively thinks of mechanical design from the standpoint of welding and use of bent steel to reduce welding hours.

The savings effected have varied widely. In some instances savings have been moderate, in others, revolutionary. Bending steel has not met with objection on the part of engineers and operators. In fact the reaction to it is favorable because of lower cost, increased strength and better appearance. When designing engineers generally become familiar with these advantages, detail welded designs will be made with the bending brake constantly in mind.

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Reheating Furnaces

(*Concluded from page* 45)

nace employs disks mounted on water-cooled transverse shafts which are rotated at various speeds by external chains or gears through a variable speed connection. While this type constantly subjects the steel to proper thermal conditions on both top and bottom, it has the inherent loss of heat that accompanies water cooling in main body of a furnace.

Soaking beam type conveys the packs or pairs through the furnace by lifting them from stationary skids, moving ahead the desired distance and lowering the sheets again to stationary skids. In this type, all of the conveyor within the chamber is made of heat resisting alloy and thus has a higher initial cost. If temperatures are controlled properly, however, these alloys serve successfully through a long life. Furnaces are both overfired and underfired by gas introduced along the side walls. Zone control of burners eliminates damage due to harshness of treatment.

Conveying mechanism usually is operated by pushbuttons interlocked with the door mechanism at discharge end. Contact being made, the conveyor moves forward discharging the pair or the pack to a driven conveyor which presents material to the mill. Succeeding pack moving forward strikes a trigger-actuated limit switch, stopping the conveyor and closing the door. Used in early installations of continuous pack furnaces, this type continues to show excellent performance and to remain the most popular. It produces a fine degree of uniformity with fuel economy of 1,000,000 to 1,500,000 B.t.u. per ton. Capacities are independent of length, width and gage of rolled material being heated. Some installations have records of from 10,000 to 33,000 pounds per hour.

Modern continuous reheating furnaces with zone control have the important advantage of good efficiency at varying rates of rolling. While a chamber of established volume cannot be fired at varying rates with maximum efficiency, firing in progressive stages or zones does permit maximum efficiency in fuel consumption under variable operation. This flexibility coupled with benefits of the soaking zone where temperature inequalities are eliminated, provides a design that is not only economical but guarantees quality.

Demand by the wide continuous strip mill have caused considerable development in reheating furnaces and have emphasized importance of better blooming mill practice to improve slab quality. The 150 soaking pits built in 1937 have done much to improve quality at their end of the rolling process. No less than $15,000,000 has been spent on new soaking pits and reheating furnaces since 1934. While much of this is in new capacity and new methods, it still indicates the shift of attention to proper soaking pit and reheating practice as an aid in improving quality and better economy.

♦

Heavy Nickel Plating Resists Corrosion

■ A new electroplating plant recently opened by Standard Steel Spring Co., Coraopolis, Pa., is especially designed to handle large sections of steel for finishing with nickel plating of a pore-free type, ranging up to 20 times the thickness of usual nickel plating. Resistance to corrosion is the most important feature of this finish. It is intended for application in oil fields and in the manufacture of containers for shipping corrosive chemicals.

A fellowship has been established at the Mellon Institute of Industrial Research for the study of this process and its scientific application to new uses.

Evaluates Executives' Views on Re-employment

(*Concluded from Page* 39)

comes from my own personal acquaintance with a number of new industries and circumstances surrounding their beginnings. Any new manufacturing concern pays the lowest going rates, is seldom confronted with union demands in the first year. Hence it can undercut older plants burdened with higher overhead, higher labor standards, and higher taxes. Employes of the new concern do not complain so readily to labor administrators, whether in government or union employ. Yearnings of these small business men have even been cultivated in Washington—or were until it was discovered that they think remarkably like big business men.

The rise in standards of wages and hours and corresponding rise in standards of competence, long had been taking place gradually with the spread of machinery, but under the Roosevelt administration it has been carried along much faster. I suppose liberals believe universally in higher standards, or at least they believe in standards. They believe in grading people, grading them upward of course, but none-the-less grading them. The consequence is that workers who cannot meet the higher standards do not work. They are "locked out." The same is true of employers. Those who are squeezed out by the rising requirements either go to work for others or join their own group of unemployed.

Creates New Unemployed Group

People who have been disemployed by spread of new wage standards and new hours standards have begun to form a distinct unemployable group. They think of themselves as the unemployed of industry, when actually industry no longer has a place for them. This change probably has been most cruel to the negroes. They found themselves let out by hundreds under the NRA, when the general rise in wages made it possible for business houses to get white people for the same wages. Some called it the "Negro Removal act."

It is possible of course, for some of the disemployed to retrain themselves—a few actually have. It also is possible for many to fit into the still unstandardized occupations such as selling and domestic service.

In general they are not at home with their "rusty skill" in the production system as it is now geared, where tolerances have narrowed. both in kind and quantity of work they are expected to do. There seems to be no way of fitting large numbers of these people back into groups of workers whose pay is standardized at hourly rates higher than these disemployed before ever earned. That is why hours shortening never is a remedy for unemployment. It works in the opposite direction. Shortening of hours probably would reduce unemployment if the average hourly rate were *lowered* at the same time hours were reduced, but nobody ever has advanced that suggestion.

Retraining Is a Solution

The individual employer, who makes it possible for workmen to retrain themselves and fit themselves back into the quickened tempo of industry, is doing more good than any social worker possibly could. Apprentice training, or retraining, is one important way toward re-employment of industry's portion of the 10,000,000. But another—and one that should not be neglected—is the case-work method for re-establishment of the individual. Employers who can practice it will put families in their debt for generations, though it will never be publicly acknowledged.

The idea encountered most frequently in talking with my twelve industrial informants is that unemployment is permanent for a considerable portion of the 10,000,000. Business may recover, or the business fabric may disintegrate further. A 30-hour week might even eventually be enacted. But many of the 10,000,000 will never work again in any case. It is a fearful thing to say, but it is beginning to be said. What then?

Those persons who cannot work, who will not work at what they can find to do, or who will not be allowed to work at what they can do (there are now millions in the last group) will be privately or publicly supported so long as national policies remain as they are or so long as industry is able to pay present standardized wages. (An alternative is inflation. Prices may rise to the point where everybody can work, though gypped in his living standard. Eventually, perhaps but not now!)

A manufacturer who believes that large unemployment will last for the rest of this generation is L. N. Gross, oldest of the dress manufacturers in the Cleveland area. He tells me that the remedy must be government unemployment on a large scale—an extended WPA, acknowledged to be permanent, open to everybody who wants to work thereon, but at noncompeting wages. He would finance it by a payroll tax, like the social security taxes. It would "up" these taxes, he admits, but if the levy were made a level one, without exemption, the burden would be even and would be added to prices.

There are still other possibilities. One already mentioned is a change in public opinion as to the social value of standard wages. Another might be decay of industry to the point where unstandard wages would again be paid for unstandard people. A third suggestion may be found in what was said not long ago by Rudolf Brinkmann, newly appointed vice president of the Reichsbank: "German production has risen in line with expansion on the money side. Workers who—due to the depression—could not make use of their abilities for years, and entrepreneurs, who had lacked orders for years, soon worked themselves into the new tasks."

It seems to be true that under certain circumstances everybody can and does go back to work. But a Viennese professor, now on his way home, said recently in my hearing that "—you Americans ought to remember that you now have more leisure." I suppose that the bad distribution of leisure is likely—for a long time to come—to be preferred to some of its remedies.

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Treating Implement Parts

(*Concluded from Page* 51)

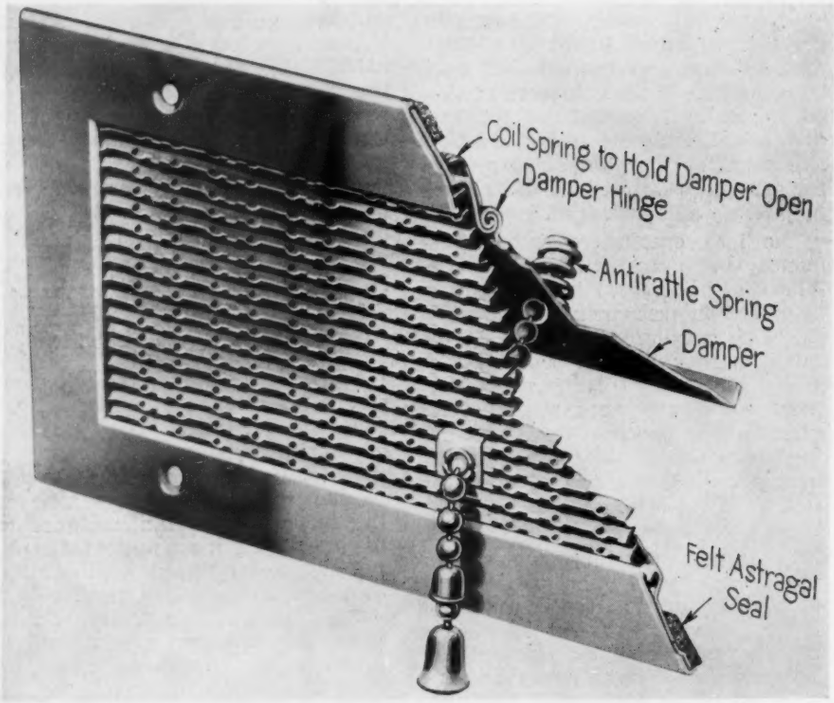
the builder's low-pressure oil burners. A large-capacity, well-insulated fan, Fig. 1, takes the products of combustion from the chamber mixed with the recirculated air and discharges it into the top zone of the furnace. This fan, designed to handle the right amount of air per minute, is equipped with water-cooled bearings and a flexible belt drive from the fan motor. Ducts, vents and dampers are utilized to direct the air flow through the furnace to give the most uniform results.

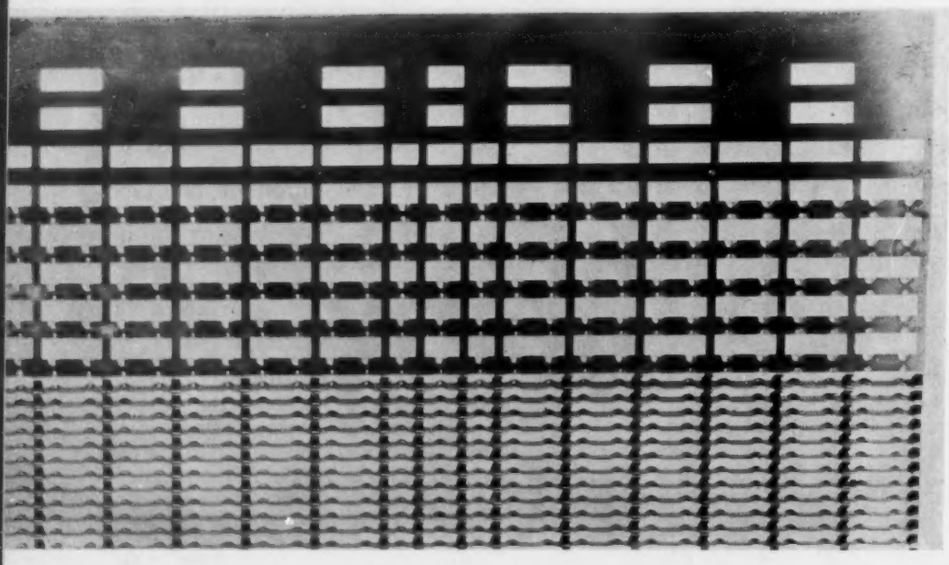
The draw furnace conveyor consists of a steel plate type belt, automatic take-up, and drive unit similar to the hardening furnace and quench tank drives. The conveyor discharges directly out through the rear door of the furnace to the work bins.

Temperature control of the furnaces is provided by three indicating controllers supplied by the Wheelco Instrument Co., Chicago. The hardening furnace is controlled in two zones, one thermocouple being placed near the front center, and the other near the discharge chute. The draw furnace is controlled in a single zone, the couple being near the discharge point. A record of the discharging temperatures of both furnaces is maintained by a recorder furnished by the Brown Instrument Co., Philadelphia.

Formed Steel Grilles

Flat strip used with continuous feeds, progressive dies and flexible design of product make possible production of grilles in wide range of sizes at great economies





■ OUTLETS at one time available for distribution of heated or cooled air were simply cast or punched grilles without any directional or diffusing characteristics. Such grilles are not satisfactory in cooling installations where entering air may be 20 or 30 degrees below the room temperature. It is even difficult to get comfortable conditions in the average room with the entering air 5 degrees below room temperature with such grilles, whereas a suitable directional and diffusing grille will generally permit temperature differences of 20 to 30 degrees.

To meet this definite need, Barber-Colman Co., Rockford, Ill., developed the Uni-Flow grille. When air outlets are placed high up in the wall of a room, as in the modern practice, appearance is a most essential consideration. Price also must be kept reasonably low.

Considerable study of air flow and methods of controlling its distribution determined that parallel strips of steel with the edge exposed to the flow of air not only gave little obstruction, thus permitting greater discharge through a smaller overall opening, but the parallel space between strips or fins would directionalize the flow. Adding curved points or lips on the edges was found to break up a straight flow and to give a turbulence to the discharge, thus aiding in mixing with the room air. These factors are incorporated in Uni-Fin and Uni-Flo formed steel grilles and registers.

Uni-Fin grilles are for warm air outlets and cold air returns on forced, warm air, house heating systems. Uni-Flo grilles, used with

Fig. 1. (Upper)—Cutaway view of assembled Uni-Fin register with spring controlled damper attached. Fig. 2. (Lower)—Progressive multiple-die perforating, forming and folding operations are shown on work here

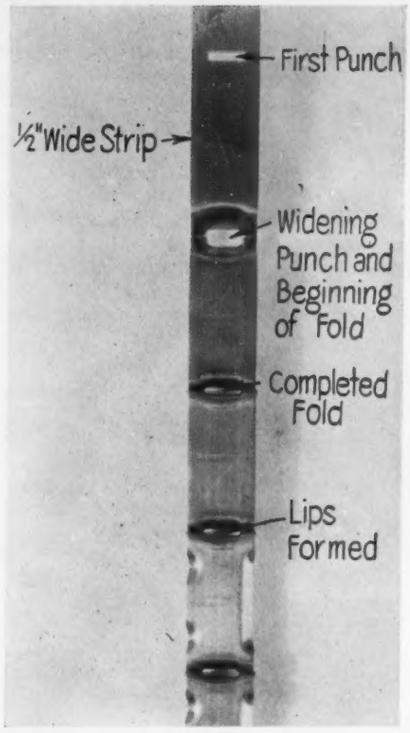


Fig. 3—Progressive multiple-die forming operations to produce fins for Uni-Flo grilles. Lips are given various curvatures by changing dies

air conditioning systems involving both heating and cooling, have strips or fins made with various angles of discharge.

All standard grilles are made from bright annealed, mild steel strip received in coils for continuous production by automatic feed. This steel will take any of the 6 to 12 standard finishes offered. Also, the same tools are used for producing grilles from copper, copper alloy or aluminum.

Uni-Fin grilles for forced warm air heating units are constructed from coils of strip 7¾, 9¾, 11¾ or 13¾ inches wide and 0.018 to 0.020-inch thick. The strip goes through a special perforating and crimping press which punches rectangular perforations, presses lips on the edges of the metal between perforations, and then folds it—all at a rate of 23 inches per minute. Fig. 2 shows the end of a strip which was taken out of the press to show various stages in these stamping and forming operations.

In the first operation, a row of alternate rectangular openings is punched out. Next operation punches out the rectangular openings between to give perforations the full width of the strip. All perforations, except the three in the center, are approximately ¼ x ⅜-inch with ⅛-inch of metal at the ends and ¼-inch at the sides. Instead of perforating two rows at a time, as might be assumed from an inspection of Fig. 2 this second row is an idle punch to give space between dies.

Similarly, the four rows where the lip is raised provide space for the dies performing the folding operation, which is done as the strip is fed forward between perforating operations. Folding bends the perforated metal so the edge of the metal is in line with the air flow. The folding die is spring-mounted to permit a necessary side movement of approximately 3/16-inch. As the metal folds together, it leaves an opening for air passage approximately 3/16-inch wide and interrupted at 1-inch intervals by the narrow diagonal strip between the perforations.

Folded section is sheared to give the various grilles heights desired. Four different widths of coiled strip give the required width variation. The same press is used for all widths by adding or removing perforating and lip forming dies at each side. This permits economical die construction.

A folded sheet is cut to the proper size for height of opening and welded to a one piece, 20 gage, steel frame with rounded edges. For a register, a spring-hinged damper is attached, Fig. 1, by spot welding. The damper, of 20-gage sheet steel, has a continuous piano-type hinge which is both leak and rattleproof. Each half of the hinge is purchased in the form of a section and cut to length as needed.

A coil spring, barely discernible in Fig. 1 on the back of the damper, holds the damper open except as pulled shut by engaging a bead chain in a slot. A conical spring prevents damper rattle. After the finish is applied, a strip of heavy felt astragal is glued to the back side of the frame to form a tight seal between the

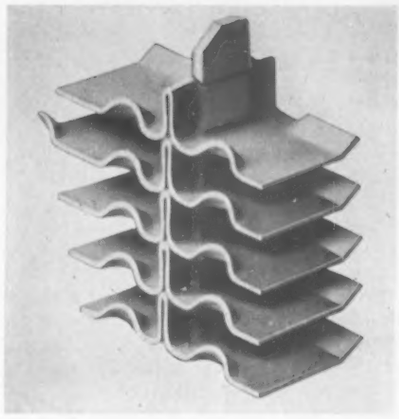


Fig. 4—Section showing method of locking Uni-Flo fins together by driving lock bar through fin openings

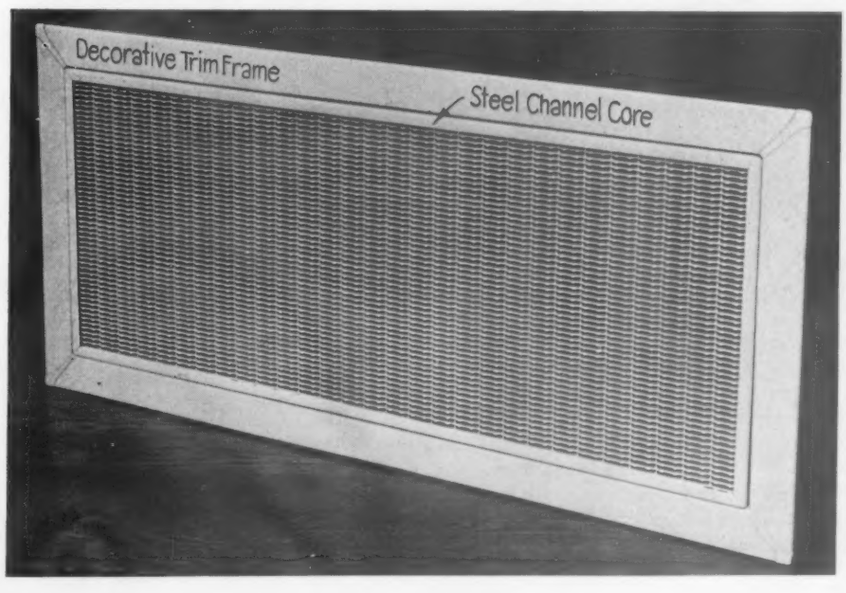
grille and wall, preventing streaks and soiling of wall.

After assembly of all parts except the beaded chain, the grille and frame or register are inspected, cleaned and given the desired finish which may be one of the following: Plain metal mill finish, gray prime lacquer dip finish, gunmetal (electroplated oxidized copper) finish, clear lacquer finish, brushed bronze finish, or bright zinc (electroplated). Two of these choices provide an unfinished or priming coat which permits finishing to match any wall surface when installed.

Uni-Flo grilles and registers are not built from a wide strip but are an assembly of fins. These units are made in single grilles in any width or length in increments of ⅛-inch up to 48 inches square. Larger grilles consist of combinations of small units.

The fins are made from flat strip

Fig. 5—Assembled Uni-Flo grille with corner trim plates welded in place



coil stock, ½-inch wide by 0.018-inch thick. An automatic press with double dies is fed from two rolls at the rate of 210 inches per minute (each roll). Fig. 3 shows the progressive operations in forming a strip. By changing the lip forming dies, various air stream discharge angles are obtained.

First press operation in Fig. 3 is to punch a narrow slot. Second of the multiple punches enlarges and spreads this opening and partially folds the bend. The next operation closes the bend which spaces the fins, and the final operation forms the lips. As the two strips leave the press, they are cut automatically in any set length from 2 inches to 48 inches in increments of ⅛-inch.

When assembling into griles, the correct number of each type of fin is placed on edge against rows of pins to hold them in line. The fold spaces the fins 0.200-inch apart, fixing the air opening at 3/16 x ⅞-inch. To hold the fins together in a solid core 0.062 x ¼-inch, half hard, steel support bars are driven by an air hammer through the openings in the fold, which are 1 inch apart, Fig. 4. This provides a rigid and uniform construction for the folded portion, accurately spaces the fins and prevents shifting. In addition, when the bar is driven through the slot

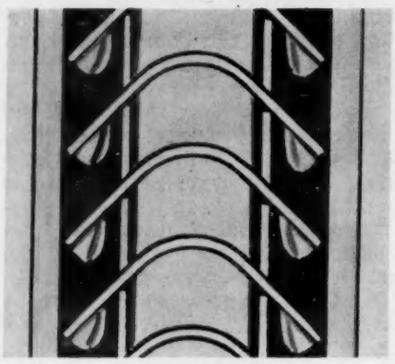


Fig. 6—Cross section of assembled Sight-Tite grille. Curved fins make units peekproof and rainproof

in the folded portion, it forms a friction-tight fit on the bar, thus obviating any possibility of rattling. Ends of support bars are crimped to lock the fins on the bars.

Next the grille core is placed in a steel channel molding drawn to special shape. This channel is cut to length and notched so it can be bent by hand around the core. After core and molding are clamped in a fixture which squares the molding, the two ends and the corners are torch welded together.

Frames for the grilles are made of 18-gage sheet or 0.050-inch steel plate, in two general types. One type has mitered corners which are torch welded and ground smooth. Standard types have the V-corner covered by trim plates, Fig. 5, spot welded to the frame. In one style, the core molding and frame are integral, but in all the other styles the frame is first installed in the wall separately, after which the core molding is inserted and locked in place with two or more screw locks operated from the front of the core molding.

Where a damper is needed, it is added in the same manner described above for Uni-Fin registers. After inspection, the grille or register is given one of 12 standard finishes. These include the six finishes listed for Uni-Fin grilles plus six others: Satin nickel finish electroplated on copperplated base, satin copper electroplated finish, buffed electroplated zinc, brushed electroplated zinc, polished nickel electroplated on a copperplated base, and baked gray rust-resistant prime coat.

One special type of fin, the Sight-tite, is used in grilles for ventilator openings in doors, walls, panels or baseboards. This type provides ventilation but does not permit anyone to see through. It consists of a U-shaped fin, Fig. 6, which is formed with a multiple die from flat coiled strip stock, 0.014 to 0.016-inch thick and 0.625-inch wide, at the rate of 230 inches per minute and is cut to 36-inch lengths. After curving, the width is ½-inch across the top, the same as other fins, so all fit the same molding.

In forming, the stock is curved and the opening for the support bar cut, leaving metal to space the fins projecting in two points. Next operation crimps the edges. Because of the difficulty in holding the curved shape in assembly, these fins are strung on the support bars, one fin at a time, in a specially designed machine. These fins then are set in molding, framed, assembled into grilles and finished.

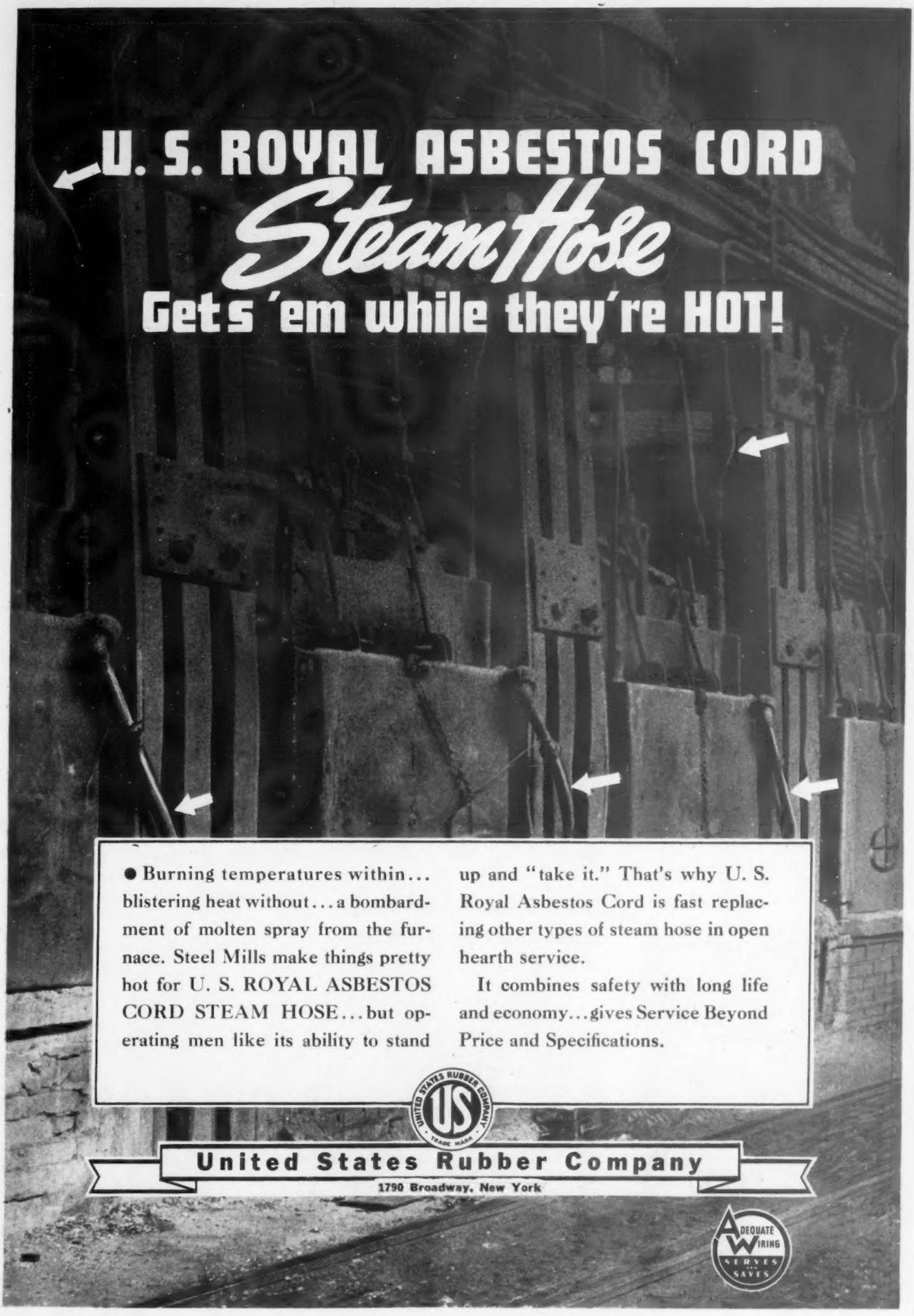
Press Operations Highly Mechanized

■ **Here round blanks of electric steel for motor laminations are being fed into an inclined press which will cut out the slots for the windings and a hole for the shaft. Automatic feed is used on this press. Conveyors are widely employed throughout the entire Lima, O., plant of Westinghouse Electric & Mfg. Co. in handling motor laminations such as pictured here. Making a huge volume of small motors, stamping laminations necessarily is on a high production basis with mechanized handling equipment a valuable adjunct**

Revise Simplified Practice For Cupola Refractories

■ National bureau of standards has announced revised simplified practice, cupola refractories, has been printed and copies may be obtained from the government printing office, Washington.

Revision adds nine sizes of 6-inch cupola blocks for diameters larger than those formerly listed, a new schedule of twenty 9-inch blocks for outside diameters ranging from 66 to 168 inches, and eight 4½-inch "colliau" blocks for outside diameters ranging from 25 to 82 inches.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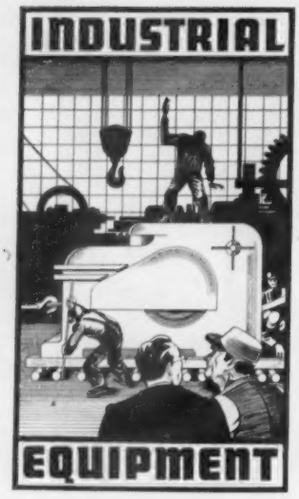
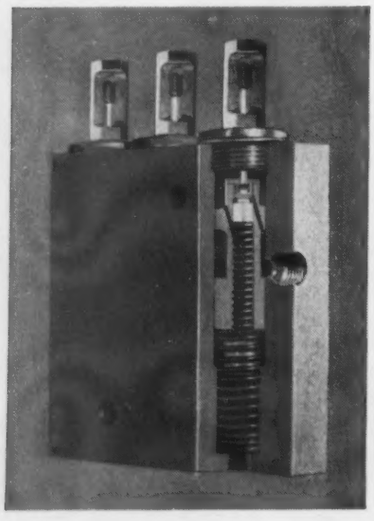


Designs System for Lubricating Cranes

■ Blaw-Knox Co., Pittsburgh, through its Gordon Lubricators division, has announced a line of grease lubricating equipment for users of cranes and auxiliary equipment.

Known as the Model H lubricating system, this equipment contains a manually operated pumping unit designed for use with the new Model H measuring valve. Pump holds 8 pounds of grease and can be filled by hand or by a portable grease pump. Double acting pistons reduce time cycle of operation, and a detachable handle is a safety precaution against tampering or excessive operation.

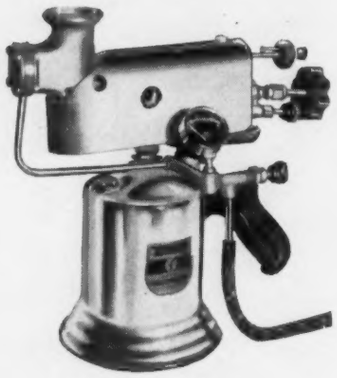
Model H valve operates on a simple displacement principle. Line pressure from the pumping unit is utilized in forcing a measured shot of grease into the bearing. When pressure is relieved at the pump, valves recharge in readiness for the next greasing cycle. Each valve has an indicator which shows when grease is delivered. This system provides independent operation of all valves in parallel. While centrally motivated, each valve is adjustable as to quantity of grease, being capable of feeding from 0 to 0.4-ounce per shot. Illustration shows a 3-valve block, cut away to reveal internal construction of one valve chamber.



Metal Spray Gun Is Inexpensive to Operate

■ Turner Brass Works, Sycamore, Ill., has announced a metal spray gun for use with all lead-tin alloys in automotive body work, pattern and corebox work, making scale models and miniatures, corrosion protection and covering non-metallic objects for plating and oxidizing.

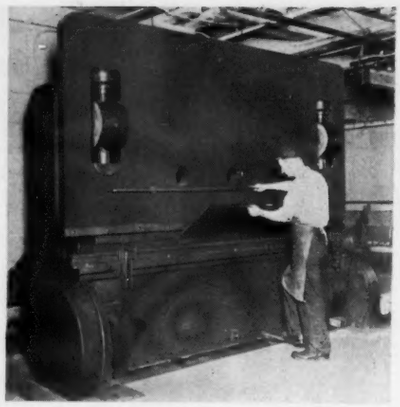
Heat is furnished by a sturdy blow-torch, and standard rods or bars of solder may be used. Pressure and volume of air required is low. Gun is said to operate four hours on about 5 cents worth of gasoline. Spray may be controlled instantly from fine to coarse, and on or off. List price of complete outfit is $42.50.



Steel Press Brake Has Unconventional Design

■ Bryant Machinery & Engineering Co., 400 West Madison street, Chicago, has recently announced a new Rafter steel press brake, manufactured by Ferracute Machine Co., Bridgeton, N. J.

Differing widely from conventional machines, this brake employs a design in which the ram is pulled downward into the work, power being applied from below the dies. Machine consists of only two major members, the ram and the bed. Its design eliminates heavy end housings tied together at the top by a heavy crown. Ram and bed members are increased in vertical depth, practically eliminating deflection. Bed member and end frames are welded together. Bed is an unusually deep section of heavy, single-thickness rolled steel plate, giving maximum resistance to deflection from ram pressure. Connecting rod eccentrics are carried in the ends of the bed member, being centered transversely directly below center of the dies.

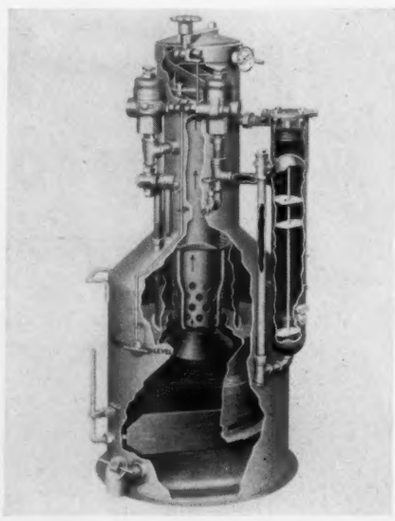


Ram is heavy rolled steel plate with a heavy horizontal rib welded to the back. Only mechanism carried on the ram is the self-contained adjusting device, which consists of a high-torque reversing motor connected to the adjusting screws through worm gearing. All drive mechanism is either attached to or contained within the bed.

Generates Acetylene For Welding and Cutting

■ The Linde Air Products Co., 205 East Forty-second street, New York, has added to its line a portable Carbic medium-pressure acetylene generator, type CMP-2, developed for the user of small qualities of acetylene for oxyacetylene welding and cutting.

Generator utilizes processed calcium carbide, and makes available a dependable supply of acetylene,

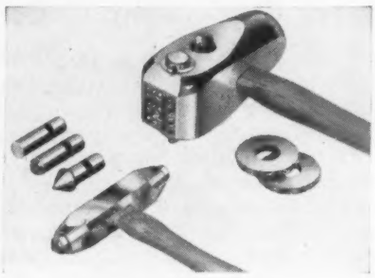


generated as required. It takes eight cakes of carbide at a single charge and yields approximately 80 cubic feet of acetylene from one charging. Outstanding feature of this generator is the rubber sealing cone which automatically seals off the cake holder from the water shell when generator is not in use. This assures most economical use of carbide.

Multiple-Wheel Device Used in Stamping Metal

■ Quality Die Co., South Chicago, Ill., has added to its line a multiple-wheel marking device, made in two models, one for use as a sledge in stamping hot material and the other for hand use with a sledge for stamping cold work. Also announced was an inspector hammer with changeable heads.

Quick changeability of figures and characters makes the billet-marker a time saving tool. Figures



are engraved on the wheels, capable of marking on metal up to 415 brinell. Mechanism is strong and fully enclosed to prevent damage from misuse. Numbers or characters may be marked on alloy steel, forgings or castings in a variety of sizes with this tool.

Marks Made by Paint Stick Are Permanent

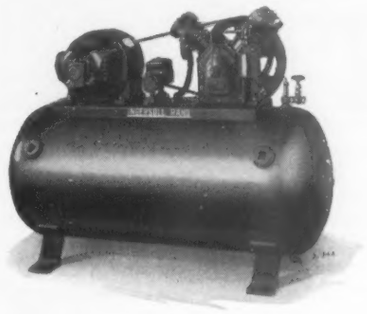
■ Markal Co., 6 East Lake street, Chicago, has placed on the market a marking material, solidified paint in stick form, for cold-surface work on lumber, building stone, structural steel, glass, cardboard, celluloid, brick, cement, slate, etc., and another marking material for marking hot surfaces in temperatures from 200 to 1800 degrees Fahr.

The material for cold surfaces can be used on wet or dry materials. Mark dries like liquid paint. The hot surface marking material will not run or flow, char or discolor when hot or come off after cooling. A hot billet or metal sheet may be immersed in water immediately after marking without defacing marks. The chemical action of an acid pickling bath does not affect markings.

Paint sticks are supplied in black, white, yellow, green, red and blue.

Introduces Compressors For Service Station Use

■ Ingersoll-Rand Co., Phillipsburg, N. J., has placed on the market a line of three Type 30 two-stage au-



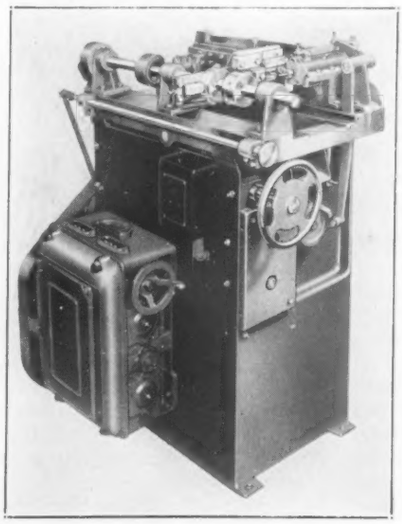
tomotive compressors for use in garages and service stations.

This series, in ¾, 1 and 3-horsepower sizes, is characterized by V-arrangement of cylinders, simplified valve construction, fully enclosed centrifugal unloader, ball-bearing compressor, automatic start and stop control, completely sealed crankcase, copper-finned intercooler, rigid mounting of seamless steel tank, and a standard continuous duty motor.

Spring Torsion Winding Machine Easily Adjusted

■ Torrington Mfg. Co., Torrington, Conn., has added to its line a torsion spring winding machine, said to provide increased accuracy and speed in the production of torsion springs with complicated end forms.

Incorporated in this machine are the following features: Ample time



for forming; provision for mounting tools to form either or both ends of springs; spindle in horizontal plane; readily accessible forming tools; quick adjustment of feed, number of coils, pitch, spindle stop, arbors and cams; either slide or roll wire feed for effecting greater accuracy of first ends of springs.

The line includes three sizes of this machine for wire 0.008 to 0.135-inch in diameter.

Cleaner Is Convertible Instantly Into Sprayer

■ Clements Mfg. Co., 6650 South Narragansett avenue, Chicago, has placed on the market the Model HP Cadillac all-purpose portable electric blower, a versatile unit that may be used as a suction cleaner or as a sprayer.

Blower has a sand-cast aluminum housing; single-cast aluminum fan, statically and dynamically balanced;

3-cord, heavy duty cable for positive grounding; low torque on starting from low-speed switch. Two speeds are provided, making the 1-horsepower unit adaptable for delicate cleaning jobs or for work where a full airstream of 26,000 lineal feet per minute is required. Blower may be converted instantly into a sprayer for paints, lacquers, deodorants or insecticides.

Pneumatic Die Cushion Made in Seven Sizes

■ Dayton Rogers Mfg. Co., 2830 South Thirteenth avenue, Minneapolis, has introduced its Model B universal pneumatic die cushion, with hollow steel stem, made in seven sizes with piston diameters from 4 to 14 inches.

Hollow piston stem allows scrap slugs to fall through cushion cylinder, making this design adaptable to combination blanking, drawing and piercing, as well as to stripper control action on all compound blanking and piercing dies. No tanks are necessary for all standard drawing operations. Each cushion

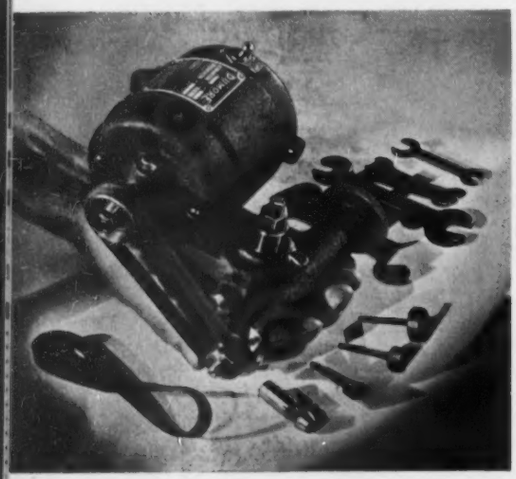
is supplied complete with a reducing regulator control and pressure gage.

Cushion cylinders may be mounted direct to bottom side of the bolster plate or to bottom of the bed frame of average inclinable or straight-side punch press. Correct height of strippers on compound blanking dies, as well as draw rings on drawing dies, is maintained by handwheel adjustment, thus compensating for bolster plate thickness variation and die sharpening or grinding.

Tiny Tool Post Grinder Is High-Precision Unit

■ Dumore Co., Racine, Wis., has announced an extra small precision grinder, known as "Tom Thumb," said to be small enough for use with a bench lathe and yet rugged enough for heavy work.

This tool post grinder will handle both internal and external grinding to an accuracy of 0.0001-inch, according to the makers. It has a 1/14-horsepower universal motor with spindle speeds from 8500 to 19,000 revolutions per minute.



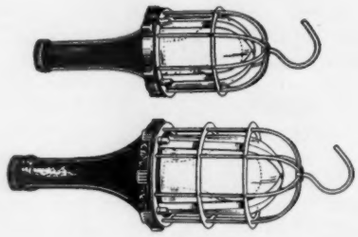
Grinding wheels from ⅛-inch to 2 inches in diameter may be used. Standard equipment includes belt, double-end wrench, 7/16 x ½-inch, grinding wheel, 2 x ½ x ½-inch and a can of oil. Other accessories and attachments are available.

Grinder sells for $24.95, and with accessories and steel case it is priced at $29.95.

Lamp Guard Protects Life and Property

■ McGill Mfg. Co., Valparaiso, Ind., has introduced a lamp guard for use on portable or extension lights where inflammable gases, liquids or materials are present. This guard offers not only protection against fire but also protects light bulbs from breakage due to splashing of water or oil.

Bulb is sealed by completely airtight connections, and fire-resisting materials are used in construc-



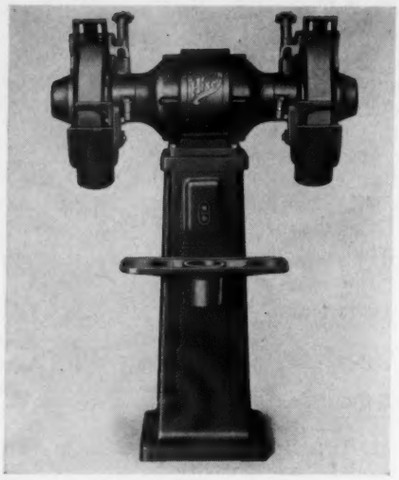
tion of the guard. Eight heavy wires and two interlacing bands form the cage, all of hard brass. A rigid hook screwed into the top of the cage provides for hanging the guard. Inside the cage is a globe of Pyrex glass, completely covering the light bulb. Globe is held in place by two hard brass bands crossing at right angles across the top of the globe and pressing the globe into a pliable rubber gasket at its base.

Handle is fire-resisting and breakproof. This vaporproof guard is furnished in two sizes, for lamps up to 60-watt and up to 100-watt.

Floor Grinder Equipped With Dustproof Bearings

■ Hisey-Wolf Machine Co., Cincinnati, has introduced a line of "Economy" grinders and buffers, including 13 different models ranging in capacity from ¾ to 5-horsepower.

Model illustrated is the 2-horsepower floor grinder, which features a totally enclosed motor, adjustable wheel guards, exhaust pipe connections, spark shields, pushbutton starter, overload protection, dustproof ball bearings, adjustable tool



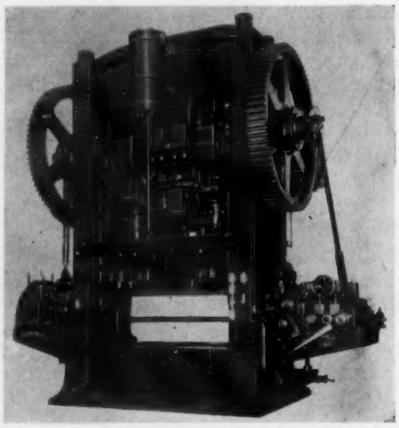
rests, tool tray and a water pot. Designated as type 4U, this grinder takes wheels measuring 12 x 2 inches. It operates at 1750 revolutions per minute. List price is $165.

Handling and Feeding of Heavy Stock Simplified

■ F. J. Littell Machine Co., 4127 North Ravenswood avenue, Chicago, has designed special equipment for handling and feeding heavy stock to a 900-ton straight-sided press in an automobile plant.

As shown in the illustration, this manufacturer installed a group of six roll feed units, complete with straightener and scrap cutter, for feeding sheet stock. These feeds have a capacity for stock 5/32-inch thick x 24 inches wide. Problem of handling and feeding is simplified by the use of run-in motors, which make it easier to start the stock through the machine merely by pushing an electric control button.

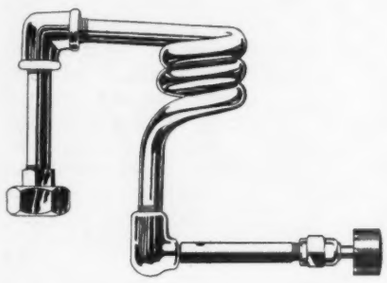
Speed of presses on which installation was made is 15 cycles per minute with a 28-inch length of feed. Equipment includes feeding rolls 8.6 inches in diameter x 26 inches wide; straightener that can be used as a three or five-roll ma-



chine, with rolls 4½ x 26 inches and maximum feed of 28 inches; and scrap cutters of the square shear type.

Firepot Conversion Unit Maintains Temperature

■ Clayton & Lambert Mfg. Co., French road, Detroit, has devised a flame-controlling burner unit for use on its firepots Nos. 12-A, 22-A and 24-A. The burner jet is fitted with a valve having a small bakelite wheel. A pot of metal can be rapidly melted and then, by adjustment of the flame control valve, be held at the desired temperature until the molten metal is needed. Gasoline is thus conserved and oxidation of the



metal and loss through making of dross is much reduced.

Known as Coiltrol, these conversion units are tested at the factory and adjusted while burning.

New Magnet Wire Is Tough and Flexible

■ General Electric Co., Schenectady, N. Y., has developed a magnet wire, known as Formex, which is insulated with a synthetic resin of the polyvinyl acetal type. Because of the small space it requires for insulation and protection, this type of wire is said to give designers new opportunities for reducing the size of many products.

Electrical properties of this wire are good, and tests show it is high in resistance to abrasion and to common treating solvents. In the manufacture of electrical products it is said to withstand such operations as winding, assembly and varnish impregnation without harm.

Wheel Dressing Tools Use Small Diamonds

■ Koebel Diamond Tool Co., 1200 Oakman boulevard, Detroit, has developed a line of diamond wheel dressing tools, said to meet every industrial requirement. This type of tool makes possible the use of small diamonds. There are three prin-

cipal types of tools in this line—the Multi-Point, Multi-Edge and Multi-Set, the last of which is illustrated.

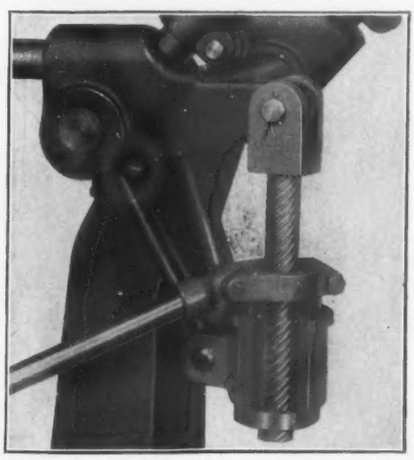
Provides Welding Safety Plus Head Protection

■ Mine Safety Appliances Co., Braddock, Thomas and Meade streets, Pittsburgh, has introduced a combination skullguard and welding shield, providing head protection and welding safety for operators in the steel, oil, construction and shipbuilding industries, where overhead hazards are general.

Comfort superior to the usual cap or felt hat is provided by the cool, lightweight skullguard, with its easy-fitting, rubber-cushioned headband. It may be removed from the welding shield and worn, peak forward, separately for other work. Welding shield is easily tilted and is the latest one-piece design with leakproof lens holder.

Adjusts Belt Tension

■ Berkeley Engineering Co., 1381 East Seventeenth street, Cleveland, has introduced recently a belt-tension adjuster for stepped cone pulleys. Known as "Tension-Trol," this device has a special position-locking nut, operating on a fast lead screw,



providing instant adjustment of the pulley centers. It is standardized in several convenient sizes and is also made to user's specifications when desired.

Respirator Protects Workers in Lead Dusts

■ H. S. Cover, South Bend, Ind., has devised a twin-filter respirator, known as Dupor No. 46, recently approved by the United States bureau of mines for use in type A or pneumeconiosis producing and lead dusts.

Special felt filters are adjustable and removable. Face-piece is soft rubber that makes an air-tight fit. It is foldable and is built to with-

stand hard usage. Light weight of the respirator is evenly distributed across the nose and mouth and at cheek locations. It does not interfere with conversation and allows plenty of clearance for spectacles or goggles. Outfit sells for $2.25.

Coupling Is Safe in Explosive Atmospheres

■ Lovejoy Flexible Coupling Co., 5009 West Lake street, Chicago, has introduced a flexible bronze coupling for handling misalignment, starting torque and absorbing shocks on direct-connected machinery in industrial locations where explosive and inflammable gases, vapors and liquids are handled.

This coupling will not spark under any conditions. Spider or resilient load cushion is made from rubber, duck, leather or a brake lining material of woven asbestos. Three-piece construction, comprising two bronze flanges and one-piece cushion spider, makes assembly and installation easy. Coupling is quiet in operation and requires no lubrication. Known as L-R Type I-A, this safety coupling is made in standard sizes with bores from 1-inch to 2¼-inch, inclusive, for 2 to 90 horsepower at 1750 revolutions per minute.

Develops Single Concealed Door Hinge for Auto Bodies

■ NOW BEING demonstrated to the automotive industry is a new type of concealed door hinge of heavy-gage steel. It is exceptionally simple in design and rugged in construction. Comprising two hinge leaves and a single pin, the unit is installed at the widest point of the body, thus permitting unrestricted body design in the way of "tumble-in" and "turn-under," designers' terms which refer to the contour of the side of the body.

Hinge assembly is located in a cutaway portion of the door pillar or post, protecting the hinge from the weather and insuring proper lubrication. Oil grooves in the hinge supply lubrication, and since they are inside the vertical mounting post, no oil can drain on the body exterior.

Permits Quick Hanging

Unit assembly with single hinge pin permits quick hanging of doors on assembly lines and eliminates lining up of hinge pins, required with the double-hinge type of mounting. Accompanying sketch shows design and mounting details; illustration shows an installed hinge.

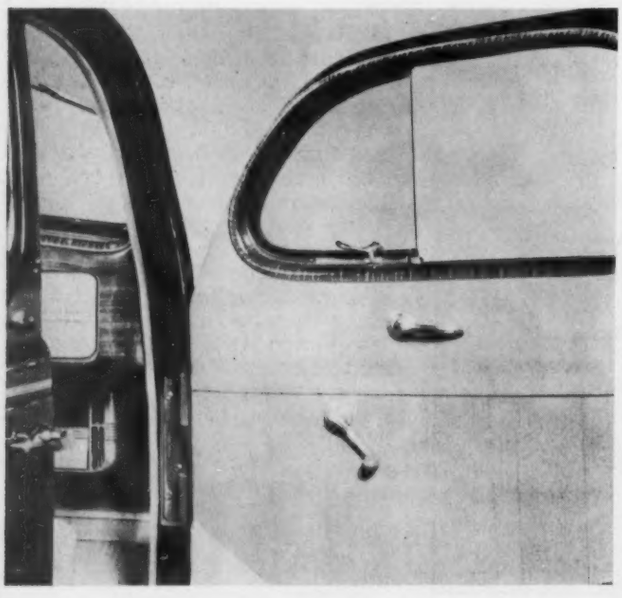
Made from flat rolled steel stock, gage of the material is chosen according to size and weight of door to be swung, ¼-inch being a typical thickness. Back hinge leaf is drilled with suitable holes for bolting to the door pillar. Front or moving leaf is bolted to the door. Length of hinge is determined by available vertical space of door and body. The leaves are formed on a press, stock for the eyes being curled to a perfect circle. Steel between the eyes is pressed out and a milling cut smoothes up the surface to insure a good mating with eyes in the respective leaves. Hole for the pin is reamed to a tolerance of 0.002-inch. The pin is SAE 1020 steel, hardened and pressed into the hole.

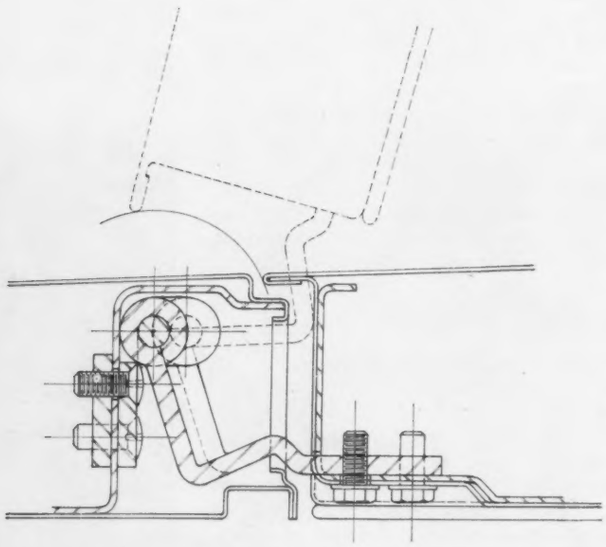
Angle of the door pillar determines whether the door will swing parallel with the ground or not, if the "parallel" type of hinge is used. However, where a pillar slants inward at the top, this can be compensated for by forming a taper in the hinge leaf so door still swings parallel with the ground. If it is desired to have the door swing with a slight lift to avoid too rapid swinging shut, this too can be provided by varying the taper in the hinge leaf.

On bodies where the "tumble-in" angle is not excessive it may be possible to use one hinge on all four doors, eliminating the need for rights and lefts and fronts and rears. Other advantages claimed include easy installation, no interference with window glass run, simple adjustment by using slotted holes for bolt mounting on pillar, permanent lubrication, and ability to accommodate door check if desired.

Further details can be obtained from the manufacturer, the Metal Specialty Co., Cincinnati, or from the hinge division sales office of this company, 409 Stephenson building, Detroit.

Illustration at left shows how new type hinge appears in use. At right is a sketch showing design of hinge as viewed from the top





Lake Superior Iron Ore Manual in First Edition

■ *Lake Superior Iron Ores,* 1938; 412 pages, 8½ x 11; fabrikoid; published by Lake Superior Iron Ore association, Cleveland; supplied by STEEL, Cleveland, for $5; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

This is a comprehensive presentation of the iron ore industry of the United States, with particular emphasis on the great Lake Superior source of supply. It is planned to revise and reissue the book at intervals of about three years. This is the first edition.

The volume is a manual of the ore industry, containing chapters on history, geology, mineralogy, classification and sampling, grading, preparation for market requirements, shipments and reduction. A directory of iron mining companies shows personnel and operations of each; a directory of mines shows location, land description, record of operations, annual shipments, grades of ore, operators and agents, railroad and lake shipping port.

Twelve double-page maps show all mining properties of the regions and a flow map in colors indicates the movement of ore from sources to consuming districts. The volume is rich in charts covering shipments, distribution and consumption of ore, analyses, reserves, taxes, prices, rail and lake carriers, freight rates, loading and unloading docks, blast furnaces, iron and steel production, ore production and imports of the United States and world iron ore production.

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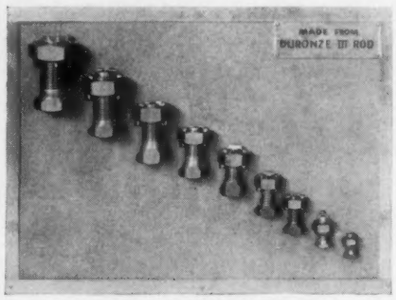
FEBRUARY "Bridgeport" BRASS CO. 1939

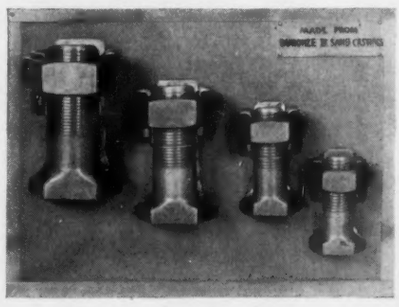
DURONZE III ROD AND INGOT USED FOR CONNECTORS

Duronze* III is used in the form of both rod and ingot in the manufacture of the wire and cable connectors made by Jasper Blackburn Corp., St. Louis. In the smaller sizes both the bodies and the nuts are formed on automatic screw machines from Duronze III rod, which is well adapted to this type of fabrication because it is free machining. Duronze III rod in the sizes used has an average tensile strength of about 100,000 pounds per square inch.



Spacers for these connectors are made from Duronze III castings.

The larger connectors are made entirely from Duronze III sand castings. If the ingot is kept free from contamination with other alloys, castings of this metal have the unusually high tensile strength of over 70,000 pounds per square inch. Nuts made from Duronze III are stronger and harder than those made from other types of silicon bronzes. When tightened, it will be found that Duronze connectors will grip the wire



and cable more effectively, requiring much more effort to pull them loose. Moreover, the nuts do not distort or stretch when tightened, and can be used over and over again without deterioration.

This line of connectors is an interesting illustration of the possibility of fabricating a range of sizes from a single alloy adaptable to different types of fabrication.

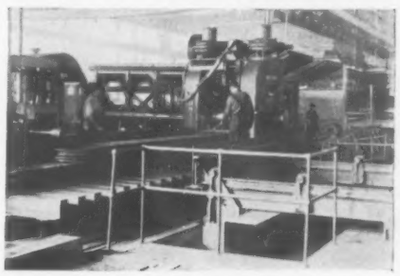
MODERN BRASS MANUFACTURING METHODS IMPROVE QUALITY AND SERVICE

Higher Quality Metal Permits More Economical Forming and Finishing

Recent developments in brass mill equipment and methods enable the brass manufacturer to produce metal of higher quality and uniformity, which are reflected in the brass fabricator's plant in faster, more efficient working and in lower buffing and finishing costs.

Important among these developments is the use of larger bars for rolling sheet and strip. Present-day rolling mill equipment permits the use of bars several times as large as those previously used. Better control of melting temperature takes place because the time lag encountered in pouring smaller bars is greatly reduced. Moreover, there is less opportunity for partial cooling or oxidation of the metal, with the result that a sounder, more homogeneous casting is obtained.

In the hot rolling process these larger bars retain their heat longer, and the rolling operations can be carried on at a more uniform temperature. Current practice is to hot roll all alloys that are malleable when hot. Hot rolling produces a metal that is sounder and more uniform internally, because the process brings about an internal welding of the metal, eliminating many microscopic gas bubbles or holes that might otherwise be present. The hot rolling method has been widely used throughout the steel industry for this reason. Powerful cold rolling equipment is also available for alloys that cannot be hot rolled.



View of the cold breakdown mill, used for preliminary reduction of cold worked alloys.

More Uniform Thickness

Radical improvements in rolling mill equipment make possible the production of

(Continued on following page, Column 2)

Night panorama of the interior of Bridgeport's new rolling mill, showing one of the new 4-high mills in the left foreground.

COPPER ALLOY BULLETIN

TYPES OF COPPER

Because of the confusion which exists in the trade concerning the various types of copper, this and subsequent articles will discuss the relative merits of the various types and the uses for which they are best suited.

Electrolytic Copper is a general term used to describe any copper in which the last refining operation is carried out by the electrolysis of a solution containing dissolved copper. The product of this operation is a very pure copper cathode. Cathodes, however, are not adapted to processing, and they are therefore melted up and cast in a form suitable for processing into sheet, rod, wire, or tubing. Depending on the details of the operation, this melting and casting procedure produces very profound changes in the properties of the copper.

The usual procedure results in the picking up of oxygen, which dissolves in the copper, forming the product called *Electrolytic Tough Pitch Copper* (ASTM Specification B-5-27). Some years ago it was found that for certain purposes the absence of oxygen is desirable. Methods were devised for eliminating the oxygen during the casting operation by the addition of phosphorus or other suitable deoxidizers. These methods produce *Electrolytic Phosphorized Copper*. More recently a process has been developed for eliminating the oxygen without the addition of a deoxidizer. Copper produced by this method is known as *Oxygen-Free Copper*.

Fire-refined Copper is copper which is refined to a satisfactory degree of purity without electrolysis. In general, it is less pure than Electrolytic Copper; however, fire refining produces some copper comparable to Electrolytic Copper in purity. The purer grade is produced in forms suitable for processing, and is usually *Tough Pitch Copper*. *Lake Tough Pitch Copper* is the most common type of Fire-refined Copper for wrought purposes. Lake Copper contains silver and arsenic as impurities in greater or smaller quantities. *Low Resistance Lake Copper* (ASTM B-4-27) is low in arsenic and other impurities; *High Resistance Lake Copper* (ASTM B-4-27) contains appreciable quantities of arsenic. Both of these types of copper may be produced as *Deoxidized Lake* or *Arsenical Copper* by the addition of a suitable deoxidizing agent.

These different types of copper vary in the amounts of small impurities that they contain. Knowledge of the effects of these impurities permits the application of the various types to best advantage.

Subsequent articles will discuss the relative characteristics of Tough Pitch Copper and Deoxidized Copper.

Fabricators desiring information on the various types of copper or on copper alloys in specific applications are invited to discuss their problems with Bridgeport Brass Company.

IMPROVED QUALITY

(Continued from Preceding Page, Column 3)

sheet that is of uniform thickness from edge to center, eliminating the crown. This uniformity is obtained by the use of four powerful high rolls and "cluster" mills, in which heavy backing rolls are used to support the work rolls and to prevent springing in the center. This new degree of uniformity is especially valuable to the fabricator who requires close gage throughout the width of the sheet.

Annealing Equipment

One of the most important recent developments in brass mill practice, from the

Battery of running-down annealing furnaces.

standpoint of the fabricator, has taken place in the design of annealing equipment. Modern annealing furnaces include fully automatic control of the entire process, with the annealing atmosphere regulated as carefully as the temperature and time. These automatic controls insure constant, uniform conditions throughout the furnace. In this way the brass mill can obtain extreme accuracy and ready duplication of the vitally important factors of temper and surface.

Through the use of this modern equipment in Bridgeport's new rolling mill, Bridgeport Brass Company is enabled to supply its customers with metal of the highest quality. To the fabricators of brass products, these characteristics mean a better product, faster and more economical fabrication, and decreased time and expense for buffing, polishing, and other finishing operations.

NEW DEVELOPMENTS

This column lists items manufactured or developed by many different sources. Further information on any of these items may be obtained by writing the Bridgeport Brass Company, who will gladly refer readers to the manufacturer or other source.

Test sets for brass and copper plating solutions are reported to be rapid and accurate in operation. They can be used by persons without specialized training to analyze the solution.

A tube cutter is designed to handle a range of copper or brass tubing from ⅛ to 1 inch. Positive screw feed permits uniform cutting regardless of the diameter of the tube to be cut. Replaceable cutting wheel is of hardened alloy steel. A V-shaped reamer is used to remove the burr left on the interior of the tube after the cutting operation.

A brightening agent is reported to produce a bright plate on articles that have been previously color-buffed when it is added to a plating solution in the proportion of about 1 cc per gallon. It has been successfully used in plating of copper, nickel, chromium, cadmium, and other metals. It is also claimed that current densities can be increased and that there is a reduction in buffing and plating time.

A spot welder is equipped with long horns for handling deep sheet metal work. Both upper and lower horns can be lengthened or shortened to conform with the type and size of work. According to the manufacturer, this adjustment makes it possible to weld light and heavy work. Horns are marked in kilovolt-ampere ratings. Welders are available in foot-, air-, or motor-operated types.

An electric grinder uses a new method of vibration control that is said to make it suitable for constant severe service on production work. The spindle is a two-piece shaft, joined with resilient steel strips that absorb vibration before it reaches the motor. Lead wires to commutator are prevented from crystallizing and breaking, and the risk of motor burnouts is reduced.

A grinding wheel center consists of clamping rim and hub connected by wire mesh cast into the structure of the hub and one side of the rim. The other side of the rim is detachable, and is held in position by bolts to clamp into the center hole of the grinding wheel. It is reported that the wire mesh provides a balancing action that aids in applying the wheel, and also a cushioning effect that lengthens the life of the wheel. The manufacturer offers wheels for approval test.

An electro-galvanizing process that has been successfully used in England for five years has now been introduced into the United States. The process incorporates electrocleaning, pickling, and galvanizing into a fully automatic procedure, and can be used for covering wires and metal parts with coatings of copper, brass, nickel, tin, and other metals. It is reported that the new process produces results 50 per cent faster than hot galvanizing at 40 per cent lower cost.

PRODUCTS OF THE BRIDGEPORT BRASS COMPANY

Executive Offices: BRIDGEPORT, CONN.— Branch Offices and Warehouses in Principal Cities

SHEETS, ROLLS, STRIPS—*Brass, bronze, copper, Duronze,** for stamping, deep drawing, forming and spinning.

CONDENSER, HEAT EXCHANGER, SUGAR TUBES—For steam surface condensers, heat exchangers; oil refineries, and process industries.

PHONO-ELECTRIC* ALLOYS—High-strength bronze trolley, messenger wire and cable.

WELDING ROD—For repairing cast iron and steel, fabricating silicon bronze tanks.

LEDRITE* ROD—For making automatic screw machine products.

BRASS "Bridgeport" CO.

Established 1865

COPPER WATER TUBE AND FITTINGS—For plumbing, heating, underground piping.

DURONZE ALLOYS—High-strength silicon bronzes for corrosion-resistant connectors, marine hardware; *hot rolled sheets* for tanks, boilers, heaters, flues, ducts, flashings.

BRASS, BRONZE, DURONZE WIRE—For cap and machine screws, wood screws, rivets, bolts, nuts.

FABRICATING SERVICE DEPT.—Engineering staff, special equipment for making parts or complete items.

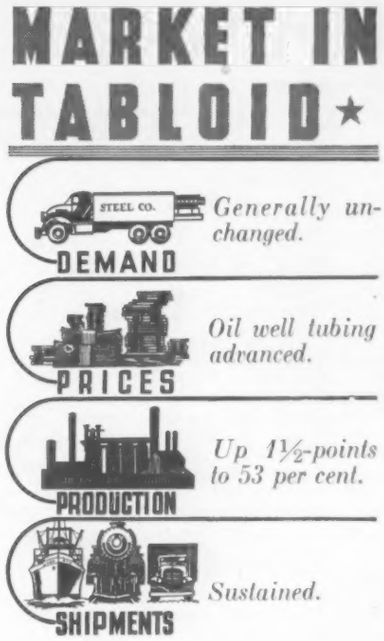
BRASS AND COPPER PIPE—"Plumrite"* for plumbing, underground and industrial services.

*Trade-name.

BRIDGEPORT BRASS

Output Expands As Buyers Mark Time

Demand Tends Upward But Gains Spotty; Prices Steady



■ IMPROVEMENT in finished steel demand is spotty, but ingot production has advanced to 53 per cent, highest level so far this year.

Buyers continue conservative, generally buying for only a short distance ahead. Nevertheless, business is fairly well sustained, with small gains shown in some instances. Bars are moving better, and some additional railroad orders have been placed. A quiet market in sheets and strip is in prospect for a brief period, since mills have worked off heavy backlogs accumulated last quarter and some consumers are not immediately in need of extra tonnage.

Unfilled business in structural shapes and reinforcing bars remains substantial, but new bookings have moderated. The automotive industry also is following a cautious buying policy, placing only small lots.

Motorcar assemblies last week were affected by both the season and the weather, declining about 10,000 units to 79,410. Compared with a year ago, however, this was a gain of more than 50 per cent. January output was about 65 per cent larger than in the 1938 month.

Last week, General Motors' production declined from 35,265 units to 33,865; Chrysler was off from 23,325 to 15,820; Ford held at 21,750, and all others dropped from 8860 to 7975.

Shipbuilding To Take Large Tonnage Of Heavy Products

Shipbuilding promises to be a good outlet for heavy steel products in the East. About 75,000 tons is pending for vessels placed recently or scheduled for early closing. Awards include ten cargo boats ordered by the United States maritime commission. About 50 such units are expected to be placed by the commission this year as part of its program, started in 1938, to contract for 500 merchant boats in ten years.

Rail producers have accumulated backlogs which appear large in comparison with small tonnages ordered a year ago, with additional purchases in sight. The Wabash and Burlington roads each has 10,000 tons pending and the Lackawanna 6000 tons. The Milwaukee road has allocated 30,000 tons. Closing on several thousand freight cars now pending is awaited, while further buying is looked for with the approval of budgets now being prepared by other roads.

Finished steel prices generally continue firm. Oil country tubing has been advanced 5 per cent, a change made to correct a cost situation. Other tubular products are unchanged, although quotations on these commodities lately have strengthened materially compared with their weak status last year.

Expansion In Steelmaking Affects Numerous Districts

Steelmaking gains last week were well distributed, with six districts participating in moving up the national average 1.5 points, or 22 points above a year ago. The rise in some sections was attributed to the necessity of increasing mill stocks of semifinished steel.

Principal gains were 3 points at Chicago to 48.5 per cent, 4 points at Cleveland to 64 per cent and 4 points at Detroit to 92 per cent. Birmingham was up 3 points to 80 per cent, St. Louis rose 8.5 points to 48.5 per cent and Cincinnati expanded 3 points to 55. Pittsburgh was unchanged at 46, while New England held at 70, eastern Pennsylvania at 34 and Wheeling at 64. Buffalo dropped 4.5 points to 39.5 per cent, and Youngstown was down 3 points to 42.

Operations were well sustained in January, considering that the month usually has an irregular trend. A strong upturn in March and April generally has its inception in February, hence variations the coming several weeks are expected to provide some clue to probable spring activity.

Awards of structural shapes and reinforcing bars were lighter last week, influenced by a smaller volume of pending tonnage for public works. Outstanding inquiry is 8600 tons for a bridge, Rock Island, Ill.

Iron and steel scrap markets are quieter. Price changes generally are small and no definite trend is indicated. The scrap composite is up 4 cents to $14.75, while the iron and steel composite is unchanged at $36.35 and the finished steel composite holds at $56.50.

COMPOSITE MARKET AVERAGES

	Feb. 4	Jan. 28	Jan. 21	One Month Ago Jan., 1939	Three Months Ago Nov., 1938	One Year Ago Feb., 1938	Five Years Ago Feb., 1934
Iron and Steel	$36.35	$36.35	$36.37	$36.36	$36.39	$38.90	$31.30
Finished Steel	56.50	56.50	56.50	56.50	56.68	61.70	51.10
Steelworks Scrap..	14.75	14.71	14.79	14.77	14.58	13.54	11.72

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Feb. 4, 1939	Jan. 1939	Nov. 1938	Feb. 1938
Steel bars, Pittsburgh	2.25c	2.25c	2.25c	2.45c
Steel bars, Chicago	2.25	2.25	2.25	2.50
Steel bars, Philadelphia	2.57	2.57	2.57	2.75
Iron bars, Terre Haute, Ind.	2.15	2.15	2.15	2.35
Shapes, Pittsburgh	2.10	2.10	2.10	2.25
Shapes, Philadelphia	2.215	2.215	2.215	2.465
Shapes, Chicago	2.10	2.10	2.10	2.30
Plates, Pittsburgh	2.10	2.10	2.10	2.25
Plates, Philadelphia	2.15	2.15	2.15	2.445
Plates, Chicago	2.10	2.10	2.10	2.30
Sheets, hot-rolled, Pittsburgh	2.15	2.15	2.15	2.40
Sheets, cold-rolled, Pittsburgh	3.20	3.20	3.20	3.45
Sheets, No. 24, galv., Pittsburgh	3.50	3.50	3.50	3.80
Sheets, hot-rolled, Gary	2.15	2.15	2.15	2.50
Sheets, cold-rolled, Gary	3.20	3.20	3.20	3.25
Sheets, No. 24, galv., Gary	3.50	3.50	3.50	3.90
Bright bess., basic wire, Pitts.	2.60	2.60	2.60	2.90
Tin plate, per base box, Pitts.	$5.00	$5.00	$5.10	$5.35
Wire nails, Pittsburgh	2.45	2.45	2.45	2.75

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$34.00	$34.00	$34.00	$37.00
Slabs, Pittsburgh, Chicago	34.00	34.00	34.00	37.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	37.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	43.00	43.00	43.00	47.00

Pig Iron

	Feb. 4, 1939	Jan. 1939	Nov. 1938	Feb. 1938
Bessemer, del. Pittsburgh	$22.34	$22.34	$22.34	$25.26
Basic, Valley	20.50	20.50	20.50	23.50
Basic, eastern, del. Philadelphia	22.34	22.34	22.34	25.34
No. 2 foundry, Pittsburgh	22.21	22.21	22.21	25.21
No. 2 foundry, Chicago	21.00	21.00	21.00	24.00
Southern No. 2, Birmingham	17.38	17.38	17.38	20.38
Southern No. 2, del. Cincinnati	20.89	20.89	20.89	23.89
No. 2X, del. Phila. (differ. av.)	23.215	23.215	23.215	26.215
Malleable, Valley	21.00	21.00	21.00	24.00
Malleable, Chicago	21.00	21.00	21.00	24.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	28.34	30.24
Gray forge, del. Pittsburgh	21.17	21.17	21.17	24.17
Ferromanganese, del. Pittsburgh	85.27	90.25	97.77	107.49

Scrap

Heavy melting steel, Pittsburgh	$15.25	$15.60	$15.15	$14.15
Heavy melt. steel, No. 2, E. Pa.	13.25	13.25	12.75	13.25
Heavy melting steel, Chicago	13.75	13.75	13.85	12.15
Rails for rolling, Chicago	17.25	17.75	17.75	15.25
Railroad steel specialties, Chicago	15.75	16.00	16.05	14.85

Coke

Connellsville, furnace, ovens	$ 3.75	$3.75	$3.75	$4.25
Connellsville, foundry, ovens	5.00	5.00	5.00	5.25
Chicago, by-product fdry., del.	10.50	10.50	10.50	11.00

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh	2.15c
Chicago, Gary	2.15c
Cleveland	2.15c
Detroit, del.	2.25c
Buffalo	2.15c
Sparrows Point, Md.	2.15c
New York, del.	2.39c
Philadelphia, del.	2.32c
Granite City, Ill.	2.25c
Middletown, O.	2.15c
Youngstown, O.	2.15c
Birmingham	2.15c
Pacific Coast points	2.65c

Cold Rolled

Pittsburgh	3.20c
Chicago, Gary	3.20c
Buffalo	3.20c
Cleveland	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.52c
New York, del.	3.54c
Granite City, Ill.	3.30c
Middletown, O.	3.20c
Youngstown, O.	3.20c
Pacific Coast points	3.80c

Galvanized No. 24

Pittsburgh	3.50c
Chicago, Gary	3.50c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown, O.	3.50c
Youngstown, O.	3.50c
Pacific Coast points	4.00c

Black Plate, No. 29 and Lighter

Pittsburgh	3.05c
Chicago, Gary	3.05c
Granite City, Ill.	3.15c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.95c
Pacific Coast	4.65c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Chicago, Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown, O.	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown, O.	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin Plate, Coke (base box)

Pittsburgh, Gary, Chicago	$5.00
Granite City, Ill.	5.10

Mfg. Terne Plate (base box)

Pittsburgh, Gary, Chicago	$4.30
Granite City, Ill.	4.40

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.25c
Chicago or Gary	2.25c
Duluth	2.35c
Birmingham	2.25c
Cleveland	2.25c
Buffalo	2.25c
Detroit, delivered	2.35c
Philadelphia, del.	2.57c
Boston, delivered	2.62c
New York, del.	2.59c
Gulf ports	2.60c
Pacific Coast points	2.85c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.10c
Chicago or Gary	2.10c
Detroit, delivered	2.20c
Cleveland	2.10c

Buffalo	2.10c
Birmingham	2.10c
Gulf ports	2.45c
Pacific coast points	2.70c

Iron

Terre Haute, Ind.	2.15c
Chicago	2.15c
Philadelphia	2.47c
Pittsburgh, refined	3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors

Pittsburgh	2.05c
Chicago, Gary, Buffalo Cleve., Birm., Young., Sparrows Pt.	2.05c
Detroit, delivered	2.15c
Gulf ports	2.40c
Pacific coast ports, f.o.b. car docks	2.50c
Philadelphia, del.	2.22c

Rail steel, straight lengths, quoted by distributors

Pittsburgh, Gary, Chicago, Buffalo, Cleveland, Birmingham	1.90c
Detroit, delivered	2.00c
Gulf ports	2.25c
Pacific Coast	2.35c

Wire Products

Pitts.-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails	$2.45
Cement coated nails	$2.45

(Per pound)

Polished staples	3.15c
Galv. fence staples	3.40c
Barbed wire, galv.	3.20c
Annealed fence wire	2.95c
Galv. fence wire	3.35c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00

To Manufacturing Trade

Base, Pitts. - Cleve. - Chicago-Birmingham (except spring wire)

Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut nails, C. L. Pitts. (10% disc. on all extras)	$3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.70c	3.40c
Chicago	2.70c	3.40c
Gary, Ind.	2.70c	3.40c
Detroit	2.75c	*3.50c
Cleveland	2.70c	3.40c
Buffalo	2.70c	3.40c

*Delivered.

Alloy Bars (Hot)

(Base, 3 to 25 tons)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.80c
Detroit, delivered	2.90c

Alloy S.A.E.	Diff.	Alloy S.A.E.	Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 1500-4600 0.20 to 0.30 Mo. 1.50-2.00 Ni.	1.10
5100 0.80-1.10 Cr.	0.45
5100 Cr. spring flats	0.15
6100 bars	1.20
6100 spring flats	0.85
Cr. N., Van.	1.50
Carbon Van.	0.85
9200 spring flats	0.15
9200 spring rounds, squares	0.40

Electric furnace up 50 cents.

Piling

Pittsburgh	2.40c
Chicago, Buffalo	2.40c
Gulf ports	2.75c

Strip and Hoops

(Base, hot-rolled, 1 to 25 tons; cold-rolled, 3 to 25 tons)

Hot Strip, 12-inch and less

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, Birmingham	2.15c
Detroit, del.	2.25c
Philadelphia, del.	2.47c
New York, del.	2.51c
Cooperage hoop, Youngs., Pitts., Chicago, Birm.	2.25c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.95c
Chicago	3.05c
Detroit, del.	3.05c
Worcester, Mass.	3.15c

Carbon	Cleve. Pitts.
0.26—0.50	2.95c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass $4 higher.

Commodity Cold-Rolled Strip

Pitts.-Cleve.-Youngstown	3.10c
Detroit, del.	3.20c
Worcester, Mass.	3.50c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$40.00
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00

Cents per pound

Angle bars, billet, mills	2.70c
Do., axle steel	2.35c
Spikes, R. R. base	3.00c
Track bolts, base	4.15c
Car axles forged, Pitts., Chicago, Birmingham	3.15c
Tie plates, base	2.15c

Base, light rails 25 to 60 lbs., 20 lbs., up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller	65-5-5 off
Do. larger, to 1-in.	60-10-5 off
Do. 1⅛ and larger	60-5-5 off
Tire bolts	50-5 off

Stove Bolts

In packages with nuts attached 75 off; in packages with nuts separate 75-12½ off; bulk 85 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	50-10-5-5 off
Elevator bolts	50-10-5-5 off
Plow bolts	65-5-5 off

Nuts

Semifinished hex.	U.S.S.	S.A.E.
6-inch and less	65-5	70
⅞—1-inch	60-10	65
1⅛ and larger	60-5	60-5

Hexagon Cap Screws

Milled	50-10 off
Upset, 1-in., smaller	65-10 off

Square Head Set Screws

Upset, 1-in., smaller	73-10 off
Headless set screws	62-10 off

Rivets, Washers

Structural, Pittsburgh, Cleveland, Chicago	3.40c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila., to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75 off	

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Chicago delivery 2½ and 1½ less, respectively. Wrought pipe, Pittsburgh base.

Butt Weld

Steel

In.	Blk.	Galv.
½	63½	54
¾	66½	58
1—3	68½	60½

Iron

¾	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel

2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54

Iron

2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel

1 to 3, butt weld	67½
2, lap weld	60
2½ to 3, lap weld	63
3½ to 6, lap weld	65
7 and 8, lap weld	64
10-inch lap weld	63½
12-inch, lap weld	62½

Iron

	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet; f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O. D.	13	$ 9.72	$23.71
1⅝" O. D.	13	11.06	22.93
2" O. D.	13	12.38	19.35
2¼" O. D.	13	13.79	21.68
2¼" O. D.	12	15.16	.....
2½" O. D.	12	16.58	26.57
2¾" O. D.	12	17.54	29.00
3" O. D.	12	18.35	31.36
3½" O. D.	11	23.15	39.81
4" O. D.	10	28.66	49.90
5" O. D.	9	44.25	73.93
6" O. D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O. D.	13	$ 7.82	$ 9.01
1¼" O. D.	13	9.26	10.67
1½" O. D.	13	10.23	11.79
1¾" O. D.	13	11.64	13.42
2" O. D.	13	13.04	15.03
2¼" O. D.	13	14.54	16.76
2¼" O. D.	12	16.01	18.45
2½" O. D.	12	17.54	20.21
2¾" O. D.	12	18.59	21.42
3" O. D.	12	19.50	22.48
3½" O. D.	11	24.62	28.37
4" O. D.	10	30.54	35.20
4½" O. D.	10	37.35	43.04
5" O. D.	9	46.87	54.01
6" O. D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$42.00-43.00
4-in., Birmingham	45.00-46.00
4-in., Chicago	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

6 x 6 to 9 x 9-in., base

Pitts., Chicago, Buffalo	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to ⅜-inch incl.	43.00
Do., over ⅜ to 41/64-in. incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Milwaukee, ovens	10.50
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs.)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	5.75c

Per ton, bulk, f.o.b. port

Sulphate of ammonia	$28.00

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$22.00	$22.50	$21.50	$23.00
Birdsboro, Pa.	22.00	22.50	21.50	23.00
Birmingham, Ala.‡	17.38	.....	16.38	22.00
Buffalo	21.00	21.50	20.00	22.00
Chicago	21.00	21.00	20.50	21.50
Cleveland	21.00	21.00	20.50	21.50
Detroit	21.00	21.00	20.50	21.50
Duluth	21.50	21.50	.....	22.00
Erie, Pa.	21.00	21.50	20.50	22.00
Everett, Mass.	22.75	23.25	22.25	23.75
Granite City, Ill.	21.00	21.00	20.50	21.50
Hamilton, O.	21.00	21.00	20.50	.....
Neville Island, Pa.	21.00	21.00	20.50	21.50
Provo, Utah	19.00	.....	.....	.....
Sharpsville, Pa.	21.00	21.00	20.50	21.50
Sparrow's Point, Md.	22.00	.....	21.50	.....
Swedeland, Pa.	22.00	22.50	21.50	23.00
Toledo, O.	21.00	21.00	20.50	21.50
Youngstown, O.	21.00	21.00	20.50	21.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	22.39	22.39	21.89	22.89
Baltimore from Birmingham	22.78	.....	21.66	.....
Boston from Birmingham	22.87	.....	.....	.....
Boston from Everett, Mass.	23.25	23.75	22.75	24.25
Boston from Buffalo	23.25	23.75	22.75	24.24
Brooklyn, N. Y., from Bethlehem	24.50	25.00	.....	.....
Canton, O., from Cleveland	22.39	22.39	21.89	22.89
Chicago from Birminghom	†21.22	.....	.....	.....
Cincinnati from Hamilton, O.	21.24	22.11	21.61	.....
Cincinnati from Birmingham	21.06	.....	20.06	.....
Cleveland from Birmingham	21.32	.....	20.82	.....
Mansfield, O., from Toledo, O.	22.94	22.94	22.44	22.44
Milwaukee from Chicago	22.10	22.10	21.60	22.60
Muskegon, Mich., from Chicago, Toledo or Detroit	24.19	24.19	23.69	24.69
Newark, N. J., from Birmingham	23.15	.....	.....	.....
Newark, N. J., from Bethlehem	23.53	24.03	.....	.....
Philadelphia from Birmingham	22.46	.....	21.96	.....
Philadelphia from Swedeland, Pa.	22.84	23.34	22.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	23.45	23.45	22.95	22.95

	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis, northern	21.50	21.50	21.00	.....
St. Louis from Birmingham	†21.12	.....	20.62	.....
St. Paul from Duluth	23.63	23.63	.....	24.13

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $26.50, base; $27.74 delivered Philadelphia.

Gray Forge		Charcoal	
Valley furnace	$20.50	Lake Superior fur.	$25.00
Pitts. dist. fur.	20.50	do., del Chicago	28.34
		Lyles, Tenn.	23.50

†Silvery

Jackson county, O., base: 6-6.50 per cent $25.50; 6.51-7—$26.00; 7-7.50—$26.50; 7.51-8—$27.00; 8-8.50—$27.50; 8.51-9—$28.00; 9-9.50—$28.50; Buffalo, $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base; Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	56.05
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickest magnesite grains, f.o.b. Chewelah, Wash., net ton, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$21.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $20, barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $80.00; Do., del. Pittsburgh 85.27

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00; Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50; Do., ton lot 80.50; Do., 75 per cent 126.00; Spot, $5 a ton higher.

Silicoman, 2½ carbon 88.00; 2% carbon, 93.00; 1%, 103.00 Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.65-1.70

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80-2.90

Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., contained cr., del. carlots 10.50c; Do., ton lots 11.25c; Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c; Do., ton lots 17.25c; Do., less-ton lots 17.75c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40-45%, lb., con. ti., f.o.b. Niagara Falls, ton lots $1.23; Do., less-ton lots 1.25; 20-25% carbon, 0.10 max., ton lots, lb. 1.35; Do, less-ton lots 1.40

Spot 5c higher

Ferrocolumbium, 50-60%, contract, lb. con. col., f.o.b. Niagara Falls $2.25; Do, less-ton lots 2.30

Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50; Do, spot 145.00; Do, contract, ton lots 145.00; Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50; Do, spot 160.00; Do, contract, ton lots. 160.00; Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c; Do, ton lots 8.00c; Do, less-ton lots 8.50c

Spot ½c lb. higher

Chromium Briquets, contract, any quantity, freight allowed, lb. 7.25c; Do, spot carlots, bulk 7.50c; Do, ton lots 8.00c; Do., less-ton lots 8.25c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.05; Do, smaller lots 2.15

Vanadium Pentoxide, contract, lb. contained $1.10; Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c; Do, spot 85.00c; 88% chrome, contract 79.00c; Do, spot 84.00c

Silicon Metal, 1% iron, contract, carlots, 2 x ⅛-in., lb. 14.00c; Do, 2% 12.50c

Spot ¼c higher

Silicon Briquetes, contract, carloads freight allowed, ton $69.50; Carload, spot 74.50; Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, bulk freight allowed, lb. 4.50c; Ton lots 5.00c; Less-ton lots 5.25c

Spot ¼c higher

Zirconium Alloy, 12-15%, contract, carloads, gross ton $97.50; Do, spot 102.50

34-40%, contract, carloads, lb., alloy 14.00c; Do, ton lots 15.00c; Do, less-ton lots 16.00c

Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb. $2.60; Do, 100-200 lb. lots 2.75; Do, under 100-lb. lots 3.00

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24
Boston	3.98	4.21	5.21	3.85	3.85	5.66	3.86	4.93	4.76
New York (Metropolitan)	3.94	4.11	4.11	3.76	3.75	5.56	3.73	4.90	4.50
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	....	4.50
Baltimore	3.80	3.95	4.35	3.65	3.65	5.00	3.70	5.05	4.30
Norfolk, Va.	4.00	4.15	4.55	3.85	3.85	5.20	3.90	4.80	5.40
Buffalo	3.60	3.97	3.97	3.77	3.55	5.40	3.50	4.55	4.40
Pittsburgh	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.60	4.50
Cleveland	3.50	3.65	3.65	3.55	3.73	5.33	3.50	4.70	4.62
Detroit	3.43	3.58	3.83	3.75	3.80	5.42	3.58	4.65	4.74
Cincinnati	3.85	3.82	3.82	3.80	3.83	5.43	3.57	....	4.57
Chicago	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.45	4.50
Minneapolis	3.85	4.00	4.00	3.80	3.80	5.40	3.75	5.10	4.75
Milwaukee	3.73	3.88	3.88	3.68	3.68	5.28	3.63	4.58	4.63
St. Louis	3.87	4.02	4.02	3.82	3.82	5.42	3.77	4.72	4.77
Kansas City	4.15	4.30	4.30	4.10	4.10	5.70	4.10	....	4.75
Memphis	4.00	4.15	4.15	3.95	3.95	5.71	3.90	....	5.25
Chattanooga	3.90	4.05	4.05	3.85	3.85	5.80	3.80	....	4.40
Tulsa, Okla.	4.64	4.79	4.79	4.59	4.59	6.19	4.54	....	5.54
Birmingham, Ala.	3.50	3.65	3.65	3.45	3.45	5.83	3.40	....	4.75
New Orleans	3.85	4.65	4.65	3.80	3.80	5.75	4.10	....	4.60
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	3.95	....	5.25
Seattle	4.30	4.50	5.85	4.05	4.15	5.90	3.95	....	5.25
Portland, Oreg.	4.00	4.40	6.10	4.00	4.00	5.90	3.75	6.50	4.75
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.05
San Francisco	4.05	4.45	6.00	4.00	4.00	5.60	4.00	6.40	5.15

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars: 2300	3100
Boston	3.61	4.43	4.28	7.65	6.25	6.00	8.05	8.73	7.33
New York	3.66	4.39	4.14	7.50	6.10	5.85	....	8.69	7.29
Philadelphia	3.66	4.36	3.85	7.46	6.06	5.81	8.71	....	....
Baltimore	....	4.35	3.95	....	....	....	....	....	....
Norfolk, Va.	....	4.60	....	....	....	....	....	....	....
Buffalo	3.57	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Pittsburgh	3.35	3.95	3.80	7.35	5.95	5.70	7.75	8.35	6.95
Cleveland	3.35	4.05	3.70	7.45	6.05	6.05	7.85	8.25	6.85
Detroit	3.55	3.60	3.58	7.57	6.17	5.92	7.30	8.55	7.15
Cincinnati	3.60	4.30	3.90	7.59	6.19	5.94	8.99	8.60	7.20
Chicago	3.65	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Minneapolis	....	4.64	4.00	7.60	6.20	8.79	9.34	8.94	7.54
Milwaukee	....	4.18	3.93	7.48	6.08	5.85	7.88	8.48	7.08
St. Louis	3.76	4.32	4.07	7.62	6.22	5.97	8.02	8.62	7.22
Kansas City	4.46	4.60	....	....	....	....	....	....	....
Memphis	....	4.61	....	....	....	....	....	....	....
Chattanooga	....	4.90	....	....	....	....	....	....	....
Tulsa, Okla.	....	5.09	....	....	....	....	....	....	....
Birmingham, Ala.	....	4.73	....	....	....	....	....	....	....
New Orleans	5.00	5.10	....	....	....	....	....	....	....
Seattle	....	5.60	5.65	....	7.80	7.65	8.45	....	....
Portland, Oreg.	....	5.60	6.10	9.00	8.00	7.85	8.70	....	....
Los Angeles	4.45	6.00	4.65	9.40	8.55	8.40	9.05	10.40	9.55
San Francisco	*9.30	6.55	5.20	9.65	8.80	8.65	9.30	10.65	9.80

* Based on minimum quantity.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, Feb. 2

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Quoted in dollars at current value	Continental Channe or North Sea ports, gross tons £ s d	**Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$23.40 5 0 0	$16.83		1 19 6
Basic bessemer	....	15.98		1 17 6
Hematite, Phos. .03-.05	26.91 5 15 0*	.....		.....
Billets	$34.52 7 7 6	$42.60		5 0 0
Wire rods, No. 5 gage	53.24 11 7 6	43.66		5 2 6
Standard rails	$44.46 9 10 0	$48.99		5 15 0
Merchant bars	2.30c 11 0 0	1.95c to 2.05c	5 0 0 to 5 5 0	
Structural shapes	2.09c 10 0 0	1.90c	4 17 6	
Plates, †¼ in. or 5 mm.	2.29c 10 18 9	2.19c to 2.39c	5 12 6 to 6 2 6	
Sheets, black, 24 gage or 0.5 mm.	2.72c 13 0 0	2.83c	7 5 0°	
Sheets, gal., 24 ga., corr.	3.29c 15 15 0	3.41c	8 15 0	
Bands and strips	2.77c 13 5 0	2.05c	5 5 0	
Plain wire, base	4.08c 19 10 0	2.39c to 2.83c	6 2 6 to 7 5 0	
Galvanized wire, base	4.86c 23 5 0	3.07c to 3.17c	7 17 6 to 8 2 6	
Wire nails, base	3.87c 18 10 0	2.73c to 2.93c	7 0 0 to 7 10 0	
Tin plate, box 108 lbs.	$ 4.73 1 0 3	.....	.....	

British ferromanganese $92.50 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d		French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si. 2.5	$23.17	4 19 0(a)	$15.85	598	$16.90	500	$25.29 63
Basic bess. pig iron	21.65	4 12 6(a)	.....	...	.....	...	27.90 (b)69.50
Furnace coke	5.38	1 4 2	5.96	225	7.27	215	7.63 19
Billets	34.52	7 7 6	25.04	945	29.07	860	38.74 96.50
Standard rails	1.99c	9 10 0	1.56c	1,300	2.06c	1,375	2.38c 132
Merchant bars	2.42c	11 12 0††	1.44c	1,202	1.65c	1,100	1.98c 110
Structural shapes	2.17c	10 8 0††	1.41c	1,173	1.65c	1,100	1.93c 107
Plates, †¼-in. or 5 mm	2.29c	10 19 3††	1.82c	1,515	2.06c	1,375	2.29c 127
Sheets, black	3.08c	14 15 0§	2.17c	1,805‡	2.36c	1,575‡	2.59c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.61c	17 5 0	2.70c	2,250	4.13c	2,750	6.66c 370
Plain wire	4.08c	19 10 0	1.98c	1,650	2.48c	1,650	3.11c 173
Bands and strips	2.58c	12 7 0††	1.71c	1,340	1.95c	1,300	2.29c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed. ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 75 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; †indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	†12.00
Bos. dock No. 1 exp.	13.00-13.50
New Eng. del. No. 1	14.00
Buffalo, No. 1	13.75-14.25
Buffalo, No. 2	12.00-12.50
Chicago, No. 1	13.50-14.00
Chicago, auto, no alloy	12.00-12.50
Chicago, No. 2 auto	11.00-11.50
Cincinnati, dealers.	11.50-12.00
Cleveland, No. 1	13.50-14.00
Cleveland, No. 2	12.50-13.00
Detroit, No. 1	10.00-10.50
Detroit, No. 2	9.00- 9.50
Detroit (industrial)	10.50-11.00
Eastern Pa., No. 1.	15.00-15.50
Eastern Pa., No. 2.	13.00-13.50
Federal, Ill.	12.00-12.50
Granite City, R. R.	12.50-13.00
Granite City, No. 2.	12.00-12.50
Los Angeles, No. 1.	12.50-13.00
Los Angeles, No. 2.	11.50-12.00
N. Y. dock No. 1 exp.	12.00-12.50
Pitts., No. 1 (R. R.)	16.50-17.00
Pittsburgh, No. 1	15.25-16.00
Pittsburgh, No. 2	14.00-15.00
St. Louis, R. R.	12.50-13.00
St. Louis, No. 2	12.00-12.50
San Francisco, No. 1	12.00
Seattle, No. 1	13.00-13.50
Toronto, dirs. No. 1	9.50-10.00
Valleys, No. 1	14.50-15.00

COMPRESSED SHEETS

Buffalo	12.00-12.50
Chicago, factory	12.50-13.00
Chicago, dealer	11.50-12.00
Cincinnati, del.	11.00-11.50
Cleveland	13.50-14.00
Detroit	11.75-12.25
E. Pa., new mat.	15.50
E. Pa., old mat.	11.00-11.50
Los Angeles	12.50-13.00
Pittsburgh	15.50-16.00
St. Louis	10.00-10.50
Valleys	14.25-14.75

BUNDLED SHEETS

Buffalo, No. 1	12.00-12.50
Buffalo, No. 2	11.00-11.50
Cleveland	10.00-10.50
Los Angeles	14.00
Pittsburgh	14.50-15.00
St. Louis	8.50- 9.00
Toronto, dealers	4.00

SHEET CLIPPINGS, LOOSE

Chicago	8.50- 9.00
Cincinnati, dealers.	7.00- 7.50
Detroit	8.50- 9.00
†Los Angeles	3.75- 4.00
St. Louis	7.50- 8.00

BUSHELING

Buffalo, No. 1	12.00-12.50
Chicago No. 1	12.00-12.50
Cincin., No. 1, deal.	8.00- 8.50
Cincinnati, No. 2.	3.50- 4.00
Cleveland, No. 2	7.25- 7.75
Detroit, No. 1, new	10.00-10.50
Valleys, new, No. 1	13.75-14.25
Toronto, dealers	4.00

MACHINE TURNINGS (Long)

Birmingham	†4.50- 5.00
Buffalo	7.00- 7.50
Chicago	6.75- 7.25
Cincinnati, dealers	4.75- 5.25
Cleveland	7.00- 7.50
Detroit	5.75- 6.25
Eastern Pa.	9.00- 9.50
Los Angeles	4.50- 5.00
New York	†3.50- 4.00
Pittsburgh	9.50-10.00
St. Louis	3.00- 4.00
Toronto, dealers	4.25- 4.75
Valleys	9.00- 9.50

SHOVELING TURNINGS

Buffalo	7.25- 8.00
Cleveland	7.50- 8.00
Chicago	8.50- 9.00
Detroit	6.50- 7.00
Pitts., alloy-free	11.25-11.75

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	2.00
Buffalo	7.00- 7.25
Cincinnati, dealers.	3.50- 4.00
Cleveland	7.50- 8.00
Eastern Pa.	6.50- 7.00
Detroit	5.75- 6.25
New York	†2.50- 3.00
Pittsburgh	8.25- 8.75
Toronto, dealers	3.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	13.00-13.50
East. Pa., elec. fur.	13.00-13.50
St. Louis	9.50-10.00
Toronto	4.00- 4.50

CAST IRON BORINGS

Birmingham	†6.00- 6.50
Boston dist. chem.	†6.00- 6.25
Buffalo	7.50- 8.00
Chicago	5.50- 6.00
Cincinnati, dealers.	3.50- 4.00
Cleveland	7.25- 7.75
Detroit	5.75- 6.25
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	2.50- 3.00
Toronto, dealers	3.50

RAILROAD SPECIALTIES

Chicago	15.50-16.00

ANGLE BARS—STEEL

Chicago	15.00-15.50
St. Louis	14.00-14.50

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	16.00-16.50
Chicago, leaf	15.75-16.25
Eastern Pa.	17.00-17.50
Pittsburgh	17.50-18.00
St. Louis	15.50-16.00

STEEL RAILS, SHORT

Birmingham	†12.00-12.50
Buffalo	17.00-17.50
Chicago (3 ft.)	15.50-16.00
Chicago (2 ft.)	16.00-16.50
Cincinnati, dealers.	16.75-17.25
Detroit	16.50-17.00
Los Angeles	15.00-15.50
Pitts., 3 ft. and less	18.00-18.50
St. Louis, 2 ft. & less	16.25-16.75

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	16.00-16.50
Chicago	14.00-14.50
Cleveland	17.00-17.50
Pittsburgh	17.50-18.00
St. Louis	14.00-14.50
Seattle	16.00

FROGS, SWITCHES

Chicago	13.50-14.00
St. Louis, cut	14.25-14.75

ARCH BARS, TRANSOMS

St. Louis	14.00-14.50

PIPE AND FLUES

Chicago, net	9.00- 9.50
Cincinnati, dealers	7.25-7.75

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	8.50- 9.00
Cincinnati, dealers.	7.00- 7.50
Eastern Pa.	13.50-14.00
New York	†8.50- 9.00
St. Louis	9.50-10.00

RAILROAD WROUGHT

Birmingham	†11.00-11.50
Boston district	†9.50-10.00
Eastern Pa., No. 1	15.50-16.00
St. Louis, No. 1	10.75-11.25
St. Louis, No. 2.	12.50-13.00
Toronto, No. 1 dir.	9.00

FORGE FLASHINGS

Boston district	†8.00- 8.25
Buffalo	12.00-12.50
Cleveland	11.50-12.00
Detroit	10.00-10.50
Los Angeles	9.00
Pittsburgh	14.50-15.00

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	16.50-17.00

LOW PHOSPHORUS

Buffalo, crops	16.50-17.00
Cleveland, crops	18.00-18.50
Eastern Pa., crops	17.00-17.50
Pitts., billet, bloom, slab crops	18.75-19.25

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	16.00-16.50
Eastern Pa.	17.00-17.50
Pittsburgh	17.50-18.00
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	†14.00-15.00
Boston	15.00-15.50
Chicago	17.00-17.50
New York	†14.50-15.00
Eastern Pa.	17.00-17.50
St. Louis	17.00-17.50

STEEL CAR AXLES

Birmingham	†15.00-16.00
Buffalo	16.50-17.00
Boston district	†16.00-16.50
Chicago, net	18.00-18.50
Eastern Pa.	21.50-22.50
St. Louis	18.50-19.00

LOCOMOTIVE TIRES

Chicago (cut)	16.00-16.50
St. Louis, No. 1	13.50-14.00

SHAFTING

Boston district	†15.25-15.50
New York	†15.50-16.00
Eastern Pa.	20.50-21.00
St. Louis, 1¼-3¾"	17.00-17.50

CAR WHEELS

Birmingham	†13.50-14.00
Boston dist., iron	†11.00
Buffalo, steel	16.50-17.00
Chicago, iron	13.50-14.00
Chicago, rolled steel	15.00-15.50
Cincin., iron, deal.	13.50-14.00
Eastern Pa., iron	16.50-17.00
Eastern Pa., steel	17.00-17.50
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel	17.50-18.00
St. Louis, iron	15.50-16.00
St. Louis, steel	15.00-15.50

NO. 1 CAST SCRAP

Birmingham	†13.00-13.50
Boston, No. 1 mach.	†10.50-10.75
N. Eng. del. No. 2	12.00-12.50
N. Eng. del. textile	12.50-13.00
Buffalo, cupola	14.50-15.00
Buffalo, mach.	15.50-16.00
Chicago, agri. net	10.50-11.00
Chicago, auto net	12.00-12.50
Chicago, railr'd net	11.00-11.50
Chicago, mach. net	12.00-12.50
Cincin., mach. deal.	13.50-14.00
Cleveland, mach. net	16.75-17.25
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard	14.50
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.25-15.75
San Francisco, del.	13.50-14.00
Seattle	12.00-14.50
St. Louis, cupola	12.00-12.50
St. Louis, agri. mach.	14.50-15.00
St. L., No. 1 mach.	15.00-15.50
Toronto, No. 1, mach., net	12.00-13.00

HEAVY CAST

Boston dist. break.	†10.00-10.25
New England, del.	12.50-13.00
Buffalo, break.	11.00-11.50
Cleveland, break, net	13.00-13.50
Detroit, auto net	13.00-13.50
Detroit, break	9.50-10.00
Eastern Pa.	15.50-16.00
Los Ang., auto, net.	13.00-13.50
New York, break.	†11.00-11.50
Pittsburgh, break	13.25-13.75

STOVE PLATE

Birmingham	†7.50- 8.00
Boston district	†8.00- 8.25
Buffalo	13.00-13.50
Chicago, net	8.50- 9.00
Cincinnati, dealers.	7.00- 7.50
Detroit, net	8.50- 9.00
Eastern Pa.	13.50
New York, fdy.	†10.00-10.50
St. Louis	9.00- 9.50
Toronto dealers, net	7.50- 8.00

MALLEABLE

Birmingham, R. R.	†10.50-11.00
New England, del.	14.50-15.00
Buffalo	13.50-14.00
Chicago, R. R.	15.00-15.50
Cincin., agri. deal.	12.00-12.50
Cleveland, rail	15.00-15.50
Eastern Pa., R. R.	15.00-16.50
Los Angeles	17.50-18.00
Pittsburgh, rail	14.25-14.75
St. Louis, R. R.	12.00-13.00

Iron Ore

Lake Superior Ore

Gross ton, 51½%

Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbes.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbes.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-9.25
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	12.50-13.00
Swedish low phos.	12.50-13.00
Spanish No. Africa basic, 50 to 60% nom.	11.00
Tungsten. sh. ton. unit, duty pd. nom.	19.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$23.00-24.00
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52% nom.	30.00-31.00
So. African, 50-52% nom.	30.00-31.00
Indian, 49-50%	29.00-30.00

—The Market Week—

Sheets, Strip

Sheet and Strip Prices, Pages 70 and 71

Pittsburgh — With depletion of backlogs accumulated last fall, sheet and strip producers face a quiet market for the next two to three weeks. Miscellaneous consumers are buying sparingly, while heavier orders from larger users are not looked for until late this month. Outlook for the longer term, however, is brightened by fairly heavy production schedules projected by consumers for spring. Sheet mill operations continue moderately below 60 per cent, with cold strip output estimated at about 55 per cent and hot strip near 45 per cent. Galvanized production is slightly higher at 57.

Cleveland—Except for some fill-in orders from automotive interests, new business is relatively light. Miscellaneous specifications are widely diversified but restricted to early requirements in most instances. Inventories in most instances are closely balanced with current needs. Demand is expected to remain approximately at its present level through February, with seasonal improvement looked for thereafter. Prices are steady.

Boston—Cold strip mill operations at times reach 70 per cent of capacity, but tend to vary more from day to day, dependent on incoming business, which has leveled off. Backlogs with all producers have been generally worked off. Most buying is for prompt delivery, none specifying shipment beyond 60 days.

New York—New business is retarded somewhat by the carryover of stocks of smaller consumers who anticipated future needs last quarter. Most jobbers and larger consumers, however, did not stock heavily, hence there are prospects of fairly good business as the quarter advances. Stove makers have curtailed operations after an active season but manufacturers of other household equipment are expanding production. The brighter building outlook causes makers of metal doors, door bucks and similar items to anticipate a 40 per cent increase in business this year.

Allegheny-Ludlum Steel Corp. has been awarded corrosion resisting steel for the Brooklyn and Philadelphia navy yards at $30,831, under schedule 5277, bids Jan. 5.

Cincinnati—Sheet orders have improved recently. Some buyers are seeking rush shipment, their inventories depleted. Gains are moderate but widespread, affecting both automotive interests and miscellaneous consumers.

Buffalo — The gradual improve-

ONE OF THE REASONS why MAZDA lamps made by General Electric give more light in 1939 is the improved tungsten filament that burns brightly inside the lamp. Finer than a human hair, it is coiled into a tiny spiral, then magnified 60 times for final inspection. Above (top to bottom) a coiled filament, a human hair, an uncoiled filament. When you buy MAZDA lamps made by G-E you are sure of getting the benefit of the latest improvements in lamp bulb manufacture. General Electric Company, Nela Park, Cleveland, Ohio.

THEY STAY BRIGHTER LONGER

EDISON MAZDA LAMPS

GENERAL ELECTRIC

ment in demand for sheets and strip since the first of the year has leveled off. Producers report rolling schedules stationary around the level of last week as new business is not developing. Consumers are generally holding stock at low levels.

St. Louis—Demand is fairly well sustained despite absence of forward buying. Specifications from stove makers have expanded steadily the past several weeks, with better business also appearing from manufacturers of other types of household equipment.

Birmingham, Ala.—Sheet production continues at 100 per cent capacity. Roofers' and manufacturers' demand continues heavy. There is no change in the lethargic strip situation.

Plates

Plate Prices, Page 70

Pittsburgh—Plate buying reflects cessation of government business, with decline in new projects as well as in tonnages placed. Private projects show some increase, although tonnages are not large. Of recently announced jobs half are private. A caisson gate for a dry dock at Puget Sound, Wash., 1100 tons, has been placed with Puget Sound Machinery Depot, Seattle.

Cleveland — Demand from most consumers is quiet and unchanged. A small pickup in inquiries aids the February outlook moderately.

Chicago—Plate bookings are unchanged, but the market tone has improved slightly as a result of pending freight car building. A large part of present shipments is for tank fabrication, although miscellaneous demand provides the bulk of tonnage. Great Northern railroad's inquiry for 25 tank cars is of interest partly because of their large capacity, 16,000 gallons.

Boston — Plate demand is light, except for a few specified requirements for engineering work. The latter include 900 tons, caisson steel, for the Portsmouth, N. H.-Kittery, Me., bridge. New bids are asked on 1500 tons for a siphon, Chelsea creek, Boston district. B. F. Sturtevant Co. is low at $287,232 on blowers and spares for ships being built at the Boston, Charleston and Puget Sound navy yards.

New York — Prospects for shipbuilding are favorable, with about 75,000 tons of steel, mostly plates, pending for construction just placed or up for bids soon. Of this total, 40,000 tons is required for hull and superstructure work for ten cargo vessels placed by the United States maritime commission. Six went to Newport News Shipbuilding & Dry Dock Co. and four to Sun Shipbuilding & Dry Dock Co. Other than ship work, plate demand is spotty. Railroad orders, while slightly heavier, principally are for miscellaneous equipment repairs.

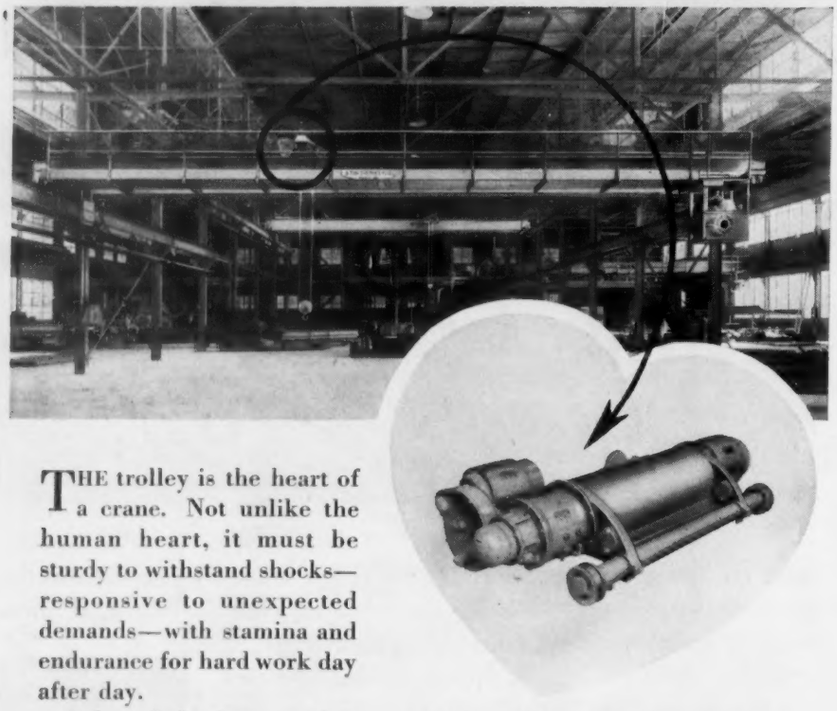
Commerce department reports that American shipyards Jan. 1 were building or had under contract for private shipowners 273 vessels, aggregating 550,154 gross tons, compared with 230 vessels, 518,507 gross tons Dec. 1.

St. Louis—Railroad and oil industry requirements aid current and prospective plate business. Fairly large tonnages are involved in pending inquiries for freight car builders. Independent oil operators have ordered 16 storage tanks of 8000-barrel capacity each.

San Francisco — Largest plate award in recent weeks is placing of 6000 tons for two freighters to be built by Moore Drydock Co., Oakland, Calif. Another large order is 2000 tons for siphons for the Shoshone project in Wyoming.

Birmingham, Ala.—Ingalls Shipbuilding Corp., subsidiary of Ingalls Iron Works Co., has been awarded

OVERHEAD
Electric Traveling Cranes
CAPACITIES 1 TO 450 TONS



THE trolley is the heart of a crane. Not unlike the human heart, it must be sturdy to withstand shocks—responsive to unexpected demands—with stamina and endurance for hard work day after day.

A few of the features that contribute to the long life and trustworthy service of Shepard Niles crane trolleys are—load carrying frame of steel—balanced drive gearing—automatic oil bath lubrication and complete enclosures for all vital parts.

A detailed description of the heart of a Shepard Niles crane is given in Bulletin No. 123. A copy is yours for the asking.

A COMPLETE LINE OF CRANES & HOISTS

SHEPARD NILES CRANE & HOIST CORP.

358 SCHUYLER AVENUE . . . MONTOUR FALLS, N. Y.

four C-3 cargo boats by the maritime commission. Total cost is $10,400,000. The vessels will be built at the company's Pascagoula, Miss., yards, while all steel and sub-contracts, as far as possible, will be placed in this district.

Plate Contracts Placed

6000 tons, two freighters to be built by Moore Drydock Co., Oakland, Calif.; plain material to Columbia Steel Co., San Francisco.

2000 tons, Shoshone and Buck Springs Creek siphons, Shoshone project, Wyoming, specification 814, to Consolidated Steel Corp., Los Angeles.

910 tons, 3300 feet, 72-inch steel pipe, Detroit, to Alco Products Co., Dunkirk, N. Y.

625 tons, covers, 15 barges, Central Barge Co., Chicago, to Marietta Mfg. Co., Marietta, O.

253 tons, plates, sheets and strip, mostly former, 173 tons, Charleston, S. C., to Central Iron & Steel Co., Harrisburg, Pa., 2.46c, delivered, plates; 2.51c, sheets and strip; schedule 5232, Jan. 5, navy department; also 80 tons, Norfolk, Va., yard, 2.35c, plates, and 2.41c, strip and sheets, schedule 5233.

120 tons, welded tank, Gulf Oil Corp., Port Arthur, Tex., to Petroleum Iron Works, Sharon, Pa.

Plate Contracts Pending

900 tons, caissons, substructure, bridge, Portsmouth, N. H.-Kittery, Me.; Frederick Snare Inc., New York, general contractor; also 150 tons, steel sheet piling.

Bars

Bar Prices, Page 70

Cleveland—Bar mill operations are substantially unchanged at the somewhat disappointing level of January. Deliveries are available within a week in most instances. Farm equipment builders have shown the only material change for the better in demand lately. Spring requirements of this consumer are expected to show a fair gain over those a year ago.

Chicago — Bar sales are slightly heavier in response to increased requirements of farm equipment, truck and industrial tractor builders. Miscellaneous demand is unchanged, with buying cautious and mostly for immediate needs. Automotive interests still lend support to the market but are not ordering ahead.

Boston — For chain-making, the navy is buying 200 tons of nickel-steel bars, for delivery at the Boston yard, bids Feb. 14. Buying and inquiry in other directions is light and largely for inventory replacement. Consumption of cold-finished bars by builders of textile mill equipment has improved, but buying is conservative. Shipbuilding needs are maintained.

New York — Carnegie-Illinois Corp., Pittsburgh, has been awarded the contract for 17,160 manganese steel bars for the Frankford, Pa., arsenal, bidding 3.47c a pound delivered as did four other mills. The successful bidder, under pro. 623, promised delivery of 1500 bars three days after the contract and the remainder as required.

Machine tool specifications and a slight pickup in railroad demand have given a moderate boost to bar tonnage. Releases from airplane builders and government shops continue brisk, particularly for special steel. Releases from shipyards are holding well. Automotive accessory releases lately have been disappointing, but demand from bolt and nut makers has bettered expectations.

Buffalo—Automotive bar orders have been moderately heavier the past few days, necessitating a slight increase in bar mill operations. Orders from miscellaneous consumers are fairly steady.

Birmingham, Ala. — Considerable

CASTING PROBLEMS *Solved* BY THE TRANTINYL PROCESS

Our advanced metallurgical and precision methods make possible . . .

- the elimination of machine work
- the reduction of operating costs and the improvement in quality of seamless casing and tubing
- the creation of new steels for specific operations.

Write Jack Trantin, our Metallurgical Engineer . . . without obligation.

1 OUNCE TO 1,000 POUNDS

YOUNGSTOWN ALLOY CASTING CORPORATION

Youngstown TRANTINYL QUALITY DISTINCTION *Ohio, U.S.A.*

BACKED BY 23 YEARS FOUNDRY METALLURGICAL EXPERIENCE

tonnage of bars, especially concrete reinforcing bars, is being booked and produced. In addition, considerable tonnage has developed from agricultural implement manufacturers. Current output of bars is at 75 per cent.

Pipe

Pipe Prices, Page 71

Pittsburgh—All sizes and specifications of oil country tubing have been advanced 5 per cent according to announcements by all producers, effective Feb. 1, to correct the cost situation. Drill pipe, casing and other products are unaffected. This is considered a special case, not indicative of a trend.

Cleveland—Inquiries from small municipalities for waterworks extensions and other similar work remains light, restricting cast pipe orders and inquiries to small lots. Movement of standard steel pipe out of jobbers' stocks in January was moderately improved over December, but little further increase is expected for February.

Boston — Merchant steel pipe buying is steady, but not heavy. Building requirements for schools and state institutions, the latter mostly in Connecticut, account for several fair-sized projects to be placed through contractors. Cast pipe is less active, although the drop has not been material. The district procurement office, treasury department, Massachusetts, has placed 400 tons for delivery at four points.

New York — Merchant pipe business lately has been the best in several weeks, attributable mainly to settlement of the strike of plumbing supply truckers. Both shipments and new orders have increased. About 700 tons of steel pipe will be required for the $3,600,000 Triboro Hospital for Tuberculosis Patients, Queens, N. Y., contractors' bids on which have been announced.

Heavier inquiry by utilities for cast pipe will be followed shortly by New York City, soon to advertise bids on better than 10,000 tons for yard stocks. Buying has improved slightly with close to 1000 tons, 36-inch for New Haven, Conn. Small-lot purchasing through contractors is slightly more active.

Birmingham, Ala. — Pipe plants feel considerable easing in spot contracts, especially during the past two weeks, with the result that current bookings are dependent almost wholly on miscellaneous lettings of small tonnage. Except for continued business of this sort, not much new work is in immediate prospect. Plants are continuing, nevertheless, on a three and four day schedule thus far.

Seattle — Seattle has called bids Feb. 9 for an unstated tonnage of cast iron for Seventeenth avenue S. W. improvement and 20-inch cast iron pipe for the West Garfield culvert. Selah, Wash., has approved a $52,000 water extension, W. P. A. project, involving two miles of pipe, tonnages unstated.

Cast Pipe Placed

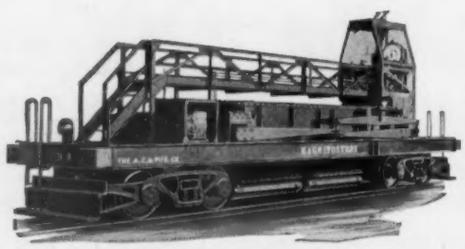
400 tons, procurement division, Boston, divided as follows: Donaldson Iron Works, Emaus, Pa., class C, 16-inch, Pittsfield, Mass., $8326; United States Pipe & Foundry Co., Burlington, N. J., 14-inch, Framingham, Mass., $3645.36; same foundry, 8-inch, Springfield, Mass., $3393.32; Warren Pipe Co., Everett, Mass., 6-inch, Ipswich, Mass., $810; these prices net for delivery, bids Jan. 26 and 27.

100 tons, 6, 8 and 10-inch, Washington, navy yard, to United States Pipe & Foundry Co., Burlington, N. J., bids Jan. 20.

Steel Pipe Pending

700 tons, tuberculosis hospital, Queens, N. Y.; contractors' bid in.

ATLAS SCALE CARS



20 Ton — Double Compartment Scale Car. Journals provided with self aligning anti-friction bearings. Equipped with Atlas Indicator and Recorder.

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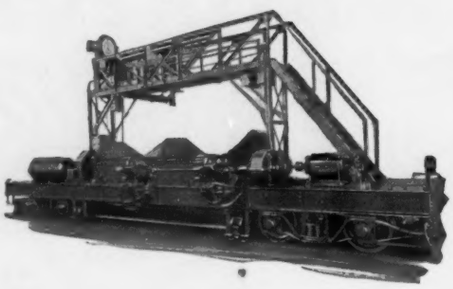

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Also Atlas Patented Indicating and Recording Mechanism for Weighing Scales.

THE ATLAS CAR & MFG. CO.

Engineers . . . Manufacturers

CLEVELAND, OHIO

Wire

Wire Prices, Page 71

Cleveland—Wire mill operations are expected to hold at their current 60 per cent rate for the near future. January business exceeded December by a comfortable margin, but no marked gain is in sight for February. Demand from farm centers has been heavier lately, but as yet spring requirements can not be estimated accurately. A seasonal lull in automotive specifications is affecting manufacturers' wire demand adversely, though consumption has held up beter than had been anticipated.

Chicago—Orders are heavier but below the volume a month ago, when some inventory replenishment was under way. Effects of rumored price weakness on demand have been removed. Automotive wire buying is cautious, being closely in line with anticipated consumption.

Boston—With incoming business sustaining finishing operations at 60-65 per cent of capacity, wire buying in the aggregate is unchanged, although mill schedules are more uneven, notably in specialty lines. Fully 95 per cent of incoming orders are for prompt delivery, indicating inventories on many specifications are low. Consumption on the whole appears to be holding.

New York — Wire buying has furthered the moderate gain recorded by most eastern producers in January. Specialties, however, are more spotty. Manufacturers' wire demand is steady, with spring wire slightly more active, but mill backlogs are scant. Building material products, moving largely through secondary sellers, are fairly easy in price.

St. Louis — Small inventories of both producers and consumers are stimulating wire and wire products output. Demand is best from miscellaneous users. Wire fencing and mesh orders to jobbers are more than seasonally quiet.

Birmingham, Ala. — Gratifying demand continues for most major wire products, widely distributed, and in individually small commitments. Production is estimated at somewhat better than 70 per cent, with volume well maintained because of the widely scattered nature of the business.

Omaha — Sheffield Steel Corp., Kansas City, Mo., has booked through the U. S. engineer here, 720,000 linear feet, 9/32-inch, seven-wire galvanized annealed steel strand for delivery, Blair, Nebr., at $8,236.78, delivered, or $12.53 per 1000 feet. Material is included in pro. 219 and weighs approximately 133,920 pounds.

Rails, Cars

Track Material Prices, Page 71

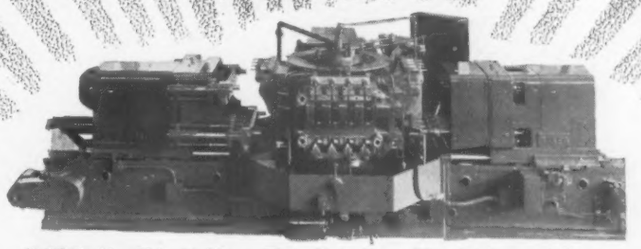
Railroad buying is providing backlog for mills, railmakers in the Chicago district having acquired over 100,000 tons, with substantial buying yet to be done. Others are also in good position. Algoma Steel Corp., Sault Ste. Marie, Ont., has started rolling rails on its accumulated orders and expects considerable additional tonnages from Canadian roads.

Total cars on inquiry promise considerable steel tonnage within a short time. Roads under court jurisdiction are being granted permission to add materially to their equipment.

Domestic producers have booked 10,000 tons of light rails for Brazil.

THIS MODERN HIGH-SPEED, HIGH PRODUCTION MACHINE REQUIRED GEARS OF . . .

AMPCO METAL



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The driving heads are equipped with Ampco Metal gears running with heat-treated, SAE 2340 steel gears. This combination successfully meets all demands for shock-proof, wear resistant, and silent operating qualities.

Ampco Metal is the usual choice of machine tool builders for extreme service parts where long life is also demanded.

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BEFORE YOU SPECIFY . . . INVESTIGATE AMPCO

Delaware, Lackawanna & Western plans to make heavy repairs to steel coaches at its shops at Kingsland, N. J. Delaware & Hudson has issued an inquiry for six all-steel passenger coaches.

Mack Trucks Inc. has booked 74 buses for Brooklyn Bus Corp., Brooklyn, N. Y., 75 for Lehigh Transit Co. and 16 for Bronx & Flushing Corp.

Twin Coach Co., Kent, O., reports booking 60 buses in past ten days, volume of orders being greater than a year ago.

Locomotives Placed

Mexican government railroad, two diesel-electric locomotives, to General Electric Co., Schenectady, N. Y.

Rail Orders Placed

Chicago, Milwaukee & St. Paul, 30,000 tons; 22,000 tons to Carnegie-Illinois Steel Corp., 8000 tons to Inland Steel Co.

Car Orders Pending

Chicago & North Western, 1000 cars; included in 1939 budget.

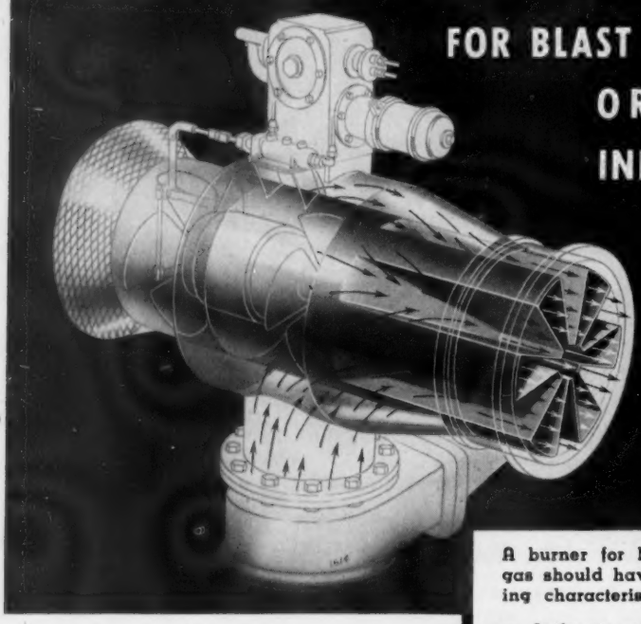
Union Pacific, 300 fifty-ton flat cars; in addition to inquiry 1000 to 2000 box cars.

Rail Orders Pending

Chicago, Burlington & Quincy, 10,000 tons rails and 2500 tons fastenings.
Delaware, Lackawanna & Western, 2500 tons, plus accessories; bids Feb. 13.
Wabash, 10,000 tons, 112-pound; provided in budget approved by court.

BRASSERT GAS BURNER

FOR BLAST FURNACE OR OTHER INDUSTRIAL GASES



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Shapes

Structural Shape Prices, Page 70

New York—Structural steel contracts are fewer and, although inquiry is also down, fabricators and contractors feel the lull is temporary. However, not for some months has the volume of pending unplaced tonnage been so light. Prices for delivered and erected fabricated material on the limited volume of business being done are soft.

Awards booked by the structural steel industry during December, according to reports received by the American Institute of Steel Construction, were the largest of any month last year, 163,445 tons, against 153,084 tons in November and 99,070 tons during December, 1937. Bookings during 1938 of 1,256,639 tons, represented a decline of 23 per cent from the 1,628,641 tons awarded in 1937. Shipments during December of 106,457 tons were also the largest of any month last year and compared with 99,872 tons in November and 108,396 tons in December, 1937. Total shipments for the year aggregated 1,158,763 against 1,660,570 tons in 1937.

Pittsburgh—Drying up of government projects is being felt in the structural market but the number of private projects shows an increase. Several large buildings are being bid, a Woolworth store requiring 575 tons and a printing plant addition 470 tons, being the largest. American Bridge Co., Pittsburgh, has been awarded 700 tons for a bridge for the Frisco railroad at

Shape Awards Compared

	Tons
Week ended Feb. 4	21,575
Week ended Jan. 28	26,671
Week ended Jan. 21	33,035
This week, 1938	10,264
Weekly average, year, 1938	21,566
Weekly average, 1939	30,425
Weekly average, January	32,362
Total to date, 1938	82,177
Total to date, 1939	152,124

Includes awards of 100 tons or more.

Wyandotte, Okla., for Grand River dam authority.

Cleveland — Private work is disappointing, although fabricators anticipate some improvement this month. Fabricators are moderately busy and the outlook is somewhat optimistic with a large volume of public projects, mostly bridges, due to appear for bids soon. Recent inquiries include 800 tons of shapes, plates and piling for the Big Creek intercepting sewer project, and 1600 tons for the West Third easterly extension to the Main street bridge here.

Chicago — A toll bridge over the Mississippi at Rock Island, Ill., 8600 tons, is the largest project coming up in that area for a year. Bids will be opened Feb. 17. Pending projects include 600 tons for an overpass at Albany, Oreg., and 200 tons for an underpass at Chapman, Calif.

Boston—Contract for 2300 tons of steel sheet piling, substructure, bridge, Jamestown, R. I., is the outstanding award in this district, Bethlehem Steel Co., Bethlehem, Pa., booking the tonnage. With Connecticut state institutional buildings taking 860 tons, contracts are about maintained, bridge needs lacking.

Buffalo—New inquiry is confined mostly to public work. Volume of inquiries is swelling, but actual awards are slow. At least ten new schools have come out for bids this month with more expected. Bethlehem Steel Co., Bethlehem, Pa., booked 800 tons for the Montgomery county bridge, New York.

Seattle—Star Iron & Steel Co., Tacoma, Wash., is low for fabricating 50-ton jib cranes for Puget Sound and Mare Island navy yards, at $146,900 and $132,900 respectively, tonnages unstated. Mountain States Construction Co., Eugene, Oreg., is low at $135,970 for an Oregon state approach and overcrossing at Albany, Oreg., 600 tons.

San Francisco—Moore Drydock Co., Oakland, Calif., has placed the largest award for plain structural material, 4000 tons for two freighters they will build, with Columbia Steel Co. Awards aggregate 7793 tons and brought the year's total to 14,154 tons as compared with 5395 tons in 1938.

Shape Contracts Placed

4000 tons, two freighters to be built by Moore Drydock Co., Oakland, Calif., plain materials to Columbia Steel Co., San Francisco.

2300 tons, steel sheet piling, substructure, bridge, Jamestown, R. I., to Bethlehem Steel Co., Bethlehem, Pa.; Merritt-Chapman & Scott, New York, general contractor; 600 tons steel bearing piles still pending.

2525 tons, press and metal shop, Fisher Body Co., Grand Rapids, Mich., to American Bridge Co., Pittsburgh.

1225 tons, grandstand, Hollywood Jockey club, Allendale, Fla., to Virginia Bridge Co., Roanoke, Va.

1100 tons, caisson gate for dry dock No. 4, Puget Sound, Wash., for United States navy, to Puget Sound Machinery Depot.

820 tons, junior-senior high school, Delhi, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; Andrew Weston Construction Co., New York, general contractor; reported last week as 500 tons.

700 tons, Frisco railroad bridge, Wyandotte, Okla., for Grand river dam authority, to American Bridge Co., Pittsburgh.

675 tons, railroad bridge, Wyandotte county, Oklahoma, to American Bridge Co., Pittsburgh.

600 tons, sheet piling, East Side drive, New York, to Bethlehem Steel Co., Bethlehem, Pa.; through Allen N. Spooner & Son Inc., New York.

500 tons, building, United States Gypsum Co., Staten Island, New York, to American Bridge Co., Pittsburgh; through Turner Construction Co., New York.

435 tons, buildings, state institution, Mystic, Conn., to Bethlehem Fabricators Inc., Bethlehem, Pa.

400 tons, building, Oklahoma A. & M. college, Stillwater, Okla., to Patterson Steel Co., Tulsa, Okla.

385 tons, field house for Utah University, Salt Lake City, Utah, to Minneapolis-Moline Power Implement Co., Minneapolis.

380 tons, Tremont health center, Bronx,

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9022A

N. Y., to Lehigh Structural Steel Co., Allentown, Pa.; A. J. Paretta Co., New York, general contractor.

330 tons, girls' farm school and auditorium, Middletown, Conn., for state, to Bethlehem Steel Co., Bethlehem, Pa.

325 tons, girls' school and auditorium, state project, Middletown, Conn., to Bethlehem Steel Co., Bethlehem, Pa.

315 tons, students union building, Richmond, Ky., to Louisville Bridge & Iron Co., Louisville, Ky.

300 tons, underpass, Clifton, N. J., to Lehigh Structural Steel Co., Allentown, Pa.

300 tons, Essex retail market, New York, to Bethlehem Steel Co., Bethlehem, Pa.; through Lieb Construction Co., New York.

300 tons, state bridge over Rock creek, Twin Falls, Idaho, to Bethlehem Steel Co., Bethlehem, Pa.

275 tons, shapes and bars, ordnance warehouse, navy yard, Washington, to Barber & Ross Co., Washington, and Bethlehem Steel Co., Bethlehem, Pa.; Harwood & Nebel Construction Co., Washington, general contractor.

250 tons, state bridges, RC-4010, Stamford, N. Y., to American Bridge Co., Pittsburgh.

215 tons, bridge RC-4010, Harpersfield-Davenport Center, Delaware county, New York, to American Bridge Co., Pittsburgh; Mohawk Paving Co. Inc., Buffalo, general contractor, $565,622.40, bids Dec. 20, Albany.

210 tons, Lea theater, Albert Lea, Minn., to Joseph T. Ryerson & Sons Inc., Chicago.

210 tons, chapel extension, for United States navy, Annapolis, Md., to Bethlehem Steel Co., Bethlehem, Pa.

205 tons, bridge PWC-12-1, sec. 3, Hardin county, Texas, to Mosher Steel Co., Dallas.

165 tons, state bridge, Brewster, Wash., to Pacific Car & Foundry Co., Seattle.

160 tons, courthouse, Elkton, Md., to Dietrich Bros. Inc., Baltimore.

156 tons, factory building, Cleveland Pneumatic Tool Co., Cleveland, to Republic Structural Iron Works, Cleveland; through Sam W. Emerson Co., Cleveland.

155 tons, bridge WPGM-2587, Fulton county, Georgia, to Virginia Bridge Co., Roanoke, Va.

150 tons, repairs to bridges 106.58 and 110.26, Princeton and Wyanet, Ill., for Chicago, Burlington & Quincy railroad, to Vierling Steel Works, Chicago.

150 tons, addition, Port Richmond high school, Staten Island, New York, to Lehigh Structural Steel Co., Allentown, Pa.; through Lawrence J. Rice Co., New York.

150 tons, office building, Ithaca, N. Y., to F. L. Heughes & Co. Inc., Rochester, N. Y.

140 tons, state highway work and miscellaneous, to Standard Steel Fabricating Co., Seattle.

140 tons, Dummy bridge, Wareham river, Wareham, Mass., to American Bridge Co., Pittsburgh.

135 tons, hospital, Newberry, Mich., to Worden Allen Co., Milwaukee.

130 tons, addition, high school, Thief River Falls, Wis., to American Bridge Co., Pittsburgh.

125 tons, high school, Zion township, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

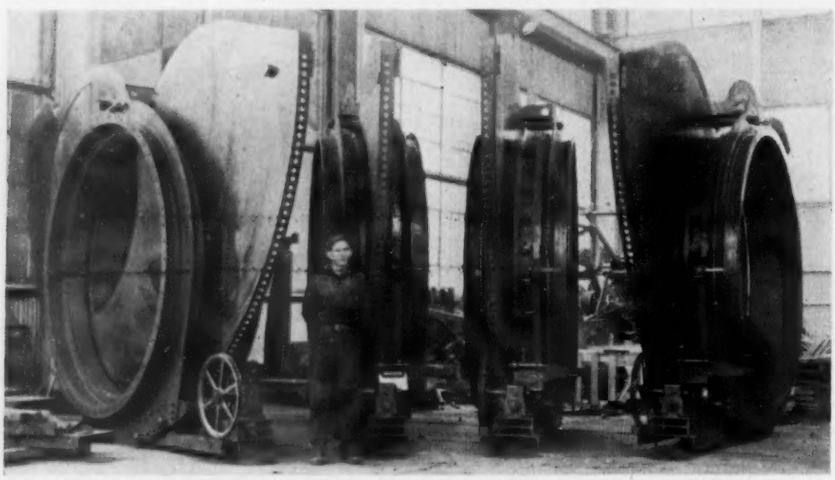
114 tons, sheet piling, bureau of reclamation, invitation 80,665-A, Blaisdell, Ariz., to unnamed interest.

110 tons, school of music, 228 East 105th street, New York, to Weatherly Steel Co., New York.

110 tons, high school, Piketon, O., to C. E. Morris Co., Columbus, O.

105 tons, bridge No. 1530, Tyler county, West Virginia, to Fairmont Mining Machine Co., Fairmont.

100 tons plus, sashes and window frames for buildings at Puget Sound Navy yard and Fort Lewis, Wash., to Truscon Steel Co., Youngstown, O.



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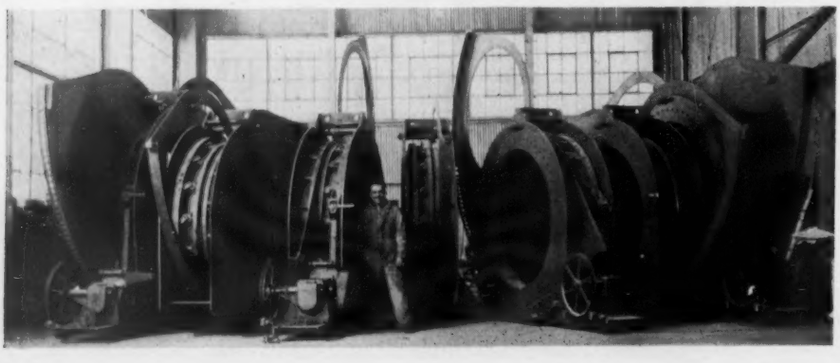


Shape Contracts Pending

8600 tons, continuous truss span type toll bridge across Mississippi river, for city of Rock Island, Ill.; bids Feb. 17.

4500 tons, bridge over Black river, Lorain, O.; bids approximately March 15.

1600 tons, West Third street easterly extension to Main street bridge, Cleveland; bids Feb. 24; also includes considerable tonnage of bars.

600 tons, state overpass at Albany, Oreg.; Mountain States Construction Co., Eugene, Oreg., low.

575 tons, building, for F. W. Woolworth Co., Springfield, Mass.

500 tons, Cherry street bridge, Milwaukee; Milwaukee Bridge Co., Milwaukee, low bidder.

500 tons, cut No. 5A, Collision bend, Cuyahoga river, Cleveland; L. A. Wells

Construction Co., Cleveland, general contractor.

500 tons, public school 18, Buffalo.

470 tons, printing building, for R. R. Donnelly & Sons Co., Chicago.

450 tons, Rahway, N. J.; Oltmer Iron Works, Jersey City, low.

425 tons, addition to R. R. Donnelly & Sons Co., Chicago; bids in.

400 tons, office building, Binghamton, N. Y., for Broome county, New York.

350 tons, intercepting sewer, city of Cleveland; bids Feb. 9; also includes 175 tons of plates and 268 tons of bearing piles.

350 tons, high school, Steubenville, O., for board of education.

310 tons, school, Kent, Conn.

300 tons, garage, Sanitation department, Brooklyn, N. Y.; bids Feb. 7, procurement division, treasury department, New York.

300 tons, school, Kent, Conn., for board of education.

300 tons, county jail, Binghamton, N. Y.; bids Feb. 7.

300 tons, city hall, Youngstown, O.; bids Feb. 14.

300 tons, bottling plant, for Coca-Cola Bottling Co., Worcester, Mass.

215 tons, boiler foundations, Kearny, N. J., for Public Service Electric & Gas Co.

214 tons, under-crossing at Chapman street, Los Angeles; United Concrete Pipe Corp., Los Angeles, low on general contract.

210 tons, school, Corfu, N. Y.

200 tons, underpass construction, Chapman, Calif.

200 tons, school, Fillmore, N. Y.

189 tons, steel girder under-crossing, Spokane county, Washington; bids Feb. 7.

175 tons, alterations to buildings, for Bear Brand Hosiery Co., Kankakee, Ill.

153 tons, 2-span I-beam bridge, 118-foot overall length, Jamaica, Vt.; Ryan & Densmore, Claremont, N. H., contractor, and two I-beam bridges, Mill brook, Fayston, Vt., Bristol Contracting Co. Inc., Bristol, N. H., low, bids Jan. 27, H. E. Sargent, commissioner of highways, Montpelier.

150 tons, supply storehouse, specification 8742, navy yard, Mare Island, Calif.; MacDonald & Kahn Ltd., Financial Center building, San Francisco, low

125 tons, mill building, for Phillips Pump & Tank Co., Cincinnati, O.

125 tons, women's prison buildings, Jessups, Md., for state.

115 tons, H columns, bridge at Guerneville, Calif.; bids Feb. 15.

100 tons, shapes and bars, bridge, Machias river, Whitneyville, Me.; bids Feb. 15, state highway commission, Augusta, Max L. Wilder, bridge engineer.

100 tons, school, Van Etten, N. Y.

Unstated tonnage, superstructure, foundry building, navy yard, Mare Island, Calif.; K. E. Parker Co., San Francisco, low, $204,767, spec. 9062; bids Jan. 25, bureau of yards and docks, navy department, Washington.

Unstated, 50-ton jib cranes for Puget Sound and Mare Island navy yards; Star Iron & Steel Co., Tacoma, low at $274,200.

Unstated tonnage, addition to four floors to post office building, Cleveland; plans being prepared.

Unstated, 40 hangar doors for Sand point air base, Seattle; bids to supply officer, Puget Sound navy yard, Feb. 16.

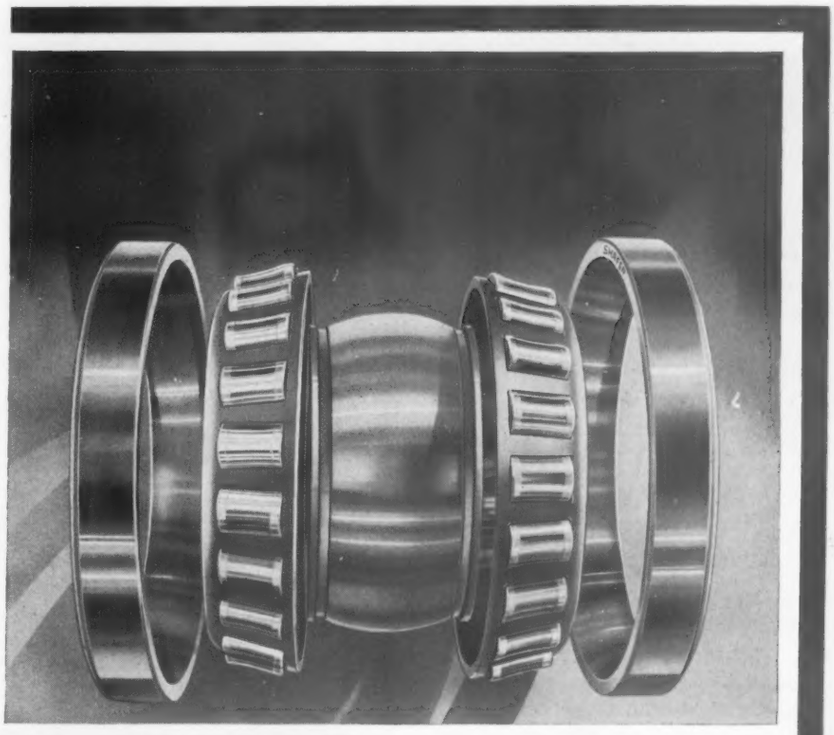
Reinforcing

Reinforcing Bar Prices, Page 71

Pittsburgh — Although inquiries have slipped as a result of a decline in governmental projects, outlook remains optimistic. This is primarily the result of a better price situation. Average going prices are closer to the published figures than formerly, and the business volume is fair.

Cleveland — Reinforcing market remains dull with prices failing to firm, and the failure of inquiries from private and public sources to record improvement. Fabricators are fairly busy, but the outlook is for reduced activity. Fabricated prices have resisted all efforts to bring about more profitable quotations.

Chicago—There has been a slight decrease in concrete reinforcing bar business due to tapering of public works orders and holding back of other closings because of weather conditions. Many pending projects involve less than 100 tons. Exceptions include 530 tons for a senior



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Long Trial A-winding

■ Finally, and at long last, the Weirton trial came to drizzling end last week in Pittsburgh. Champion of all long-winded legal labor battles, this fracas has accounted for 8,000,000 words of testimony in 220 volumes. It lasted 76 weeks and ran 532 days which is a good record, even for Broadway. When it closed, it was in a different town, a different state from where it had started; nobody was there who had begun the trial, since the judge and all the attorneys had been supplanted. One of the men had been married and had become a father; a boy who was a spectator in the early sessions completed a law course, passed the bar exams, was admitted, and cross examined witnesses in the trial. Twenty lawyers strutted their stuff during its course, and the judge broke two marble blocks trying to keep order, but, appropriately enough, steel saved the day and a block of steel was used to conserve the country's marble.

New Market

■ The new gold bolt and nut-type cuff links being peddled by exclusive haberdasheries look suspiciously like common stove bolts and investigation proves that's just what they are, in one instance at least. An enterprising jeweler bought some plain stove bolts and nuts for a pitifully small sum from a leading hardware, had them gold plated, and sells them like hot cakes for $2.50 a pair.

Starkrimsons

■ Because it has nothing whatever to do with the steel and metalworking industry, we thought you might be interested to learn that Walter C. Markle of Wixom, Mich., is the recipient of a brand new Chevrolet as a prize for concocting a new name for a "peach-like apricot distinguished by its unusual rich flavor, red-gold coloring and great size" in a contest sponsored by Stark Nurseries, Louisiana, Mo. The new fruit was fathered by ex-butcher J. C. Sparks of New Castle, Colo., who gave up meat-chopping at the age of 70 to become a modern Luther Burbank. It was first unveiled and tasted at the National New Fruits Show, and for his name—Starkrimson—Mr. Markle outinvented the thousands of other contestants. So, if your fruitmonger asks you would you like to buy a couple of baskets of starkrimsons, don't give him that blank look; act like you've been eating them for years. Many are the fruit secrets whipped up by the Stark organization since it took over Burbank's work in 1927. One which intrigues us the most is the Burbank discovery now brought to full flower —the birdproof cherry, a yellow variety which birds won't touch because they think it is unripe and would give them the tummy ache—the dummies!

Sound & Fury

■ A Toledo, O. laboratory announces it can now sour milk by sound waves and then reverse the process to sweeten the milk again. Further, these technicians say they can create nausea by proper direction of sound waves. As a radio listener who has run the gamut from Fibber McGee to the Rise of the Goldbergs, we can say there is nothing new in the use of sound waves to produce nausea—or to sour milk for that matter. What we really need now is an emetic to neutralize the persistent nausea brought on by the bearded jokes and off-key sopranos that spoil our reading every night.

Hot Stuff

■ According to a paper presented at the annual meeting of the Association of Heating and Ventilating Engineers, those exquisite bits of femininity can float around nonchalantly in subzero weather in only a smile and ⅞ of a yard of silk because they have thicker "thermal insulating tissues" than we poor males. Insulation is a marvelous thing, isn't it boys?

—SHRDLU

high school at Rockford, Ill., and 200 tons for a high school at South Bend, Ind.

Boston—Award of 660 tons for a bridge substructure, Jamestown, R. I., to Bethlehem Steel Co., Bethlehem, Pa., is expected to be followed shortly by purchase of a substantial tonnage for such work in connection with the Portsmouth, N. H.-Kittery, Me. span. Excluding a few construction jobs, mostly public work, pending requirements are down. Prices still sag.

New York—Effort to firm up or stabilize reinforcing concrete bar prices to contractors since the first of the month is evident, but success appears dubious in view of past experience. Current buying and inquiry are down although small-lot transactions are more numerous.

Seattle—Largest contracts pending are 3200 tons for the Bonneville power house and 8500 tons for the Lake Washington pontoon bridge, general contracts placed. Bethlehem Steel Co., Seattle, booked 260 tons for a Washington state bridge in Spokane county.

San Francisco—Important concrete bar awards included 1120 tons for the metropolitan water district, Los Angeles, specification 301, and 1000 tons for the Palos Verdes reservoir the same district, both placed with unnamed interests. Awards totaled 3677 tons and brought the aggregate to date to 13,929 tons, compared with 13,228 tons a year ago.

Reinforcing Steel Awards

2500 tons, army hospital, Fitzsimons, Colo., to Colorado Fuel & Iron Corp., Denver; through Truscon Steel Co., Youngstown, O., Great Lakes Construction Co., Chicago, contractor.

1120 tons, metropolitan water district, specifications 301, Los Angeles, to unnamed interest.

1000 tons, Palos Verdes reservoir, metropolitan water district, Los Angeles, to unnamed interest.

982 tons, federal jail buildings, Denver, to Colorado Builders' Supply Co., Denver; Thomas A. Bate & Sons, Denver, general contractors.

660 tons, substructure, bridge, Narra-

Concrete Bars Compared

	Tons
Week ended Feb. 4	**11,699**
Week ended Jan. 28	**23,077**
Week ended Jan. 21	**19,518**
This week, 1938	**5,931**
Weekly average, year, 1938	**6,959**
Weekly average, 1939	**14,034**
Weekly average, January	**14,736**
Total to date, 1938	**31,716**
Total to date, 1939	**70,169**

Includes awards of 100 tons or more.

gansett bay, Jamestown, R. I., to Bethlehem Steel Co., Bethlehem, Pa.; Merritt-Chapman & Scott, New York, general contractor.

600 tons, laboratory buildings and eight officers' quarters, National Institute of Health, Bethesda, Md., to Bethlehem Steel Co., Bethlehem, Pa.; Chas. H. Tompkins Co., Washington, contractor.

500 tons, Mahoning dam, Dayton, Pa., to Jones & Laughlin Steel Corp., Pittsburgh; through Dravo Corp., Pittsburgh.

475 tons, 5-span reinforced concrete arch bridge, route 6, section 9, Little Falls, N. J., to Bethlehem Steel Co., Bethlehem, Pa.; Bates & Rogers Construction Co., New York, general contractors, name of seller omitted in Jan. 30 issue.

433 tons, bureau of reclamation, invitation 33,956-A, Delta, Calif., to Columbia Steel Co., San Francisco.

400 tons, plant, Consolidated Gas & Electric Co., Baltimore, to Bethlehem Steel Co., Bethlehem, Pa.

400 tons, highway projects, routes 4 and 29, Bergen and Somerset counties, New Jersey, to Stulz-Sickles Co., Newark; through Lafera-Grecco Contracting Co., Newark.

350 tons, Pennsylvania railroad crossing elimination, Absecon, N. J., to Bethlehem Steel Co., Bethlehem, Pa.; Anthony P. Miller Inc., Atlantic City, N. J., contractor.

325 tons, group D, training school, Southbury, Conn., to Truscon Steel Co., Youngstown, O.; through E & F Construction Co., Bridgeport.

272 tons, substructure, bridge, Portsmouth, N. H.-Kittery, Me., to Bethlehem Steel Co., Bethlehem, Pa.; Frederick Snare Inc., New York, general contractor.

270 tons, grade crossing, Queens, N. Y., to Truscon Steel Co., Youngstown, O.; Nicholas DiMenna & Sons, New York, general contractors.

260 tons (60 tons shapes also involved) state bridge, Spokane county, Washington, to Bethlehem Steel Co., Seattle; Alloway & George; Spokane, general contractors.

250 tons, barracks, Fort Slocum, New Rochelle, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; through Sol Lustbader Inc., New York.

225 tons, officers' school, barracks and dispensary, Quantico, Va., to Jones & Laughlin Steel Corp., Pittsburgh; through Rosslyn Steel & Cement Co., Rosslyn, Va., Chas. H. Tompkins Co., Washington, contractor.

188 tons, Rodman street bridge, Queens, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

150 tons, East Side drive, New York, to Bethlehem Steel Co., Bethlehem, Pa.; through Allen N. Spooner & Son Inc., New York.

124 tons, Palatine bridge, Montgomery county, New York, department of public works, to Bethlehem Steel Co., Bethlehem, Pa.; McLean Construction Co., contractor.

115 tons, Canajoharie-Palatine bridge, Montgomery county, New York, to Bethlehem Steel Co., Bethlehem, Pa.; McLain Construction Co., Buffalo, general contractor.

100 tons, courthouse, Mineola, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; through P. J. Carlin Contracting Co.

Reinforcing Steel Pending

2450 tons, third section, subway, Chicago; Michael Pontarelli Inc., Chicago, low.

1542 tons, supply storehouse, specifications 8742, navy yard, Mare Island, Calif.; MacDonald & Kahn Ltd., Financial Center building, San Francisco, low on general contract.

900 tons, substructure, Potomac river bridge, Morgantown, Md.; bids Feb. 14.

530 tons, senior high school, Rockford, Ill.

500 tons, section 104-B, North Metropolitan relief sewer, Everett, Mass., 2292 feet, including 776 feet, 11-foot 3-inch diameter, and 1480 feet, 10½-foot diameter sewer in tunnel with shafts and appurtenances; bids Feb. 16, metropolitan district commission, Boston.

450 tons, building, group E, state training school, Southbury, Conn.; F. A. Burgoyne Co., Clinton, Mass., low, bids Jan. 30.

300 tons, buildings, group D, training school, Southbury, Conn.; E. & F. Construction Co., Bridgeport, Conn., low, bids Jan. 30.

290 tons, dormitories, Ohio State university, Columbus, O.

200 tons, high school, South Bend, Ind.

192 tons, civic auditorium, Santa Cruz, Calif.; no bids received and new bids Feb. 7.

190 tons, bridge in Snohomish county, Washington; bids Feb. 7.

180 tons, school, Davenport, Iowa.

175 tons, Community hotel, Lancaster, O.

158 tons, superstructure, assembly shop, naval base, Alameda, Calif; bids opened.

120 tons, school, Thief River, Minn.

100 tons, school, Park Rapids, Minn.

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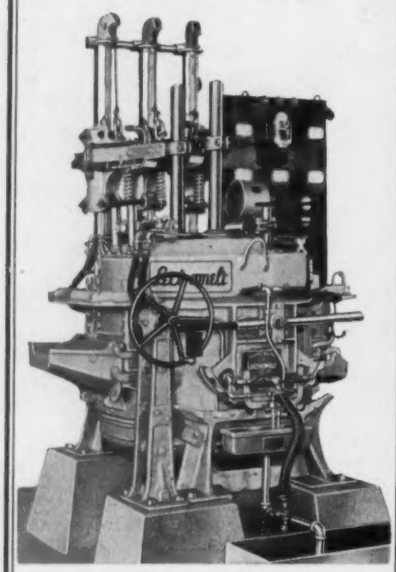

Illustration shows new 500 pound capacity 3 phase direct arc LECTROMELT furnace installed in jobbing steel foundry.

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100 tons, St. Thomas college, St. Paul, Minn.

Unstated, concrete railroad crossing, Hillyard, Wash.; bids to county engineer, C. F. Griggs, Spokane, Feb. 11; $59,000 available.

Unstated, state spans in Clackamas and Clatsop counties, Oregon; Odom Construction Co., Oregon City, and Mountain States Construction Co., Eugene, low.

Unstated, arch span concrete bridge, East Thirty-eighth street, Tacoma, Wash.; bids soon.

Unstated tonnage, (300-600 tons), grain elevator for Early & Daniel Co., Cincinnati; McDonald Engineering Co., Chicago, general contractor.

Pig Iron

Pig Iron Prices, Page 72

Pittsburgh — Pig iron continues dull. Foundries are on greatly reduced schedules, and little inquiry is appearing. Makers of heavy equipment and railroad supplies are inactive. Coke demand is fair, but only a few beehive ovens in the Connellsville area are active. Best movement is from by-product plants. Beehive coke prices are weak.

Cleveland — January pig iron releases were substantially above December and in some instances exceeded November. While some consumers have re-entered the market, buying remains hand-to-mouth. Producers are able to make prompt delivery from stock. Improvement in demand from jobbing foundries lately has been somewhat disappointing, but shipments to auto foundries have been better than expected.

Chicago—Pig iron sales and shipments are heavier, with January deliveries 25 per cent ahead of December. This is a larger gain than was expected. Completion of old contracts has helped to stimulate new business. Foundries generally are operating four or five days weekly. Automotive and farm equipment needs provide principal support, with railroad demand still relatively quiet. Foundry coke shipments last month paralleled pig iron's 25 per cent gain over December.

Boston—Continued mild improvement in foundry melt has failed to be materially reflected in pig iron buying, new business being confined to relatively small lots for prompt delivery. Buying is mostly by consumers operating with low inventories who purchase as needed. Little has been bought for delivery beyond this month.

New York—Some pig iron consumers have anticipated delays in shipments caused by weather conditions, but shipments so far this year generally have been disappointing. The melt has held around the December rate, despite gains in some directions, including machine tool builders and hardware manufacturers. Export demand is spotty, pending tonnages being small.

Philadelphia — Pig iron buying shows little improvement, although several round lots have been placed since the turn of the year. Current buying is mostly in carlots. Prices are firm.

Buffalo—Despite absence of pronounced change in demand, pig iron production has slipped to 57 per cent, with the banking of a furnace by Republic Steel Corp. Shipments are tending upward, but consumers generally are restricting orders to immediate needs. Foundry operations show little change.

Cincinnati—Releases are heavier, following an upturn in shipments in January. Improvement in the melt is spotty and has not affected producers of automotive castings. New buying is restricted by tonnage remaining to be shipped against old contracts. By-product foundry coke is being extended through February at $9.75, delivered, Cincinnati.

St. Louis—Pig iron buying is in small lots for prompt shipment, the largest order reported being 350 tons. Demand is coming principally from smaller foundries. Jobbers report fairly active demand for castings from miscellaneous users.

Birmingham, Ala. — While there has been, thus far, no decrease in the number of blast furnaces and operations a decline has been evident in buying of pig iron during the past week or 10 days. Melters are stocking some iron but not in great quantity, as shipping instructions are not materializing as regularly as had been anticipated. Sixteen of the 18 blast furnaces are active.

Toronto, Ont.—Sales are steady, with melters gradually showing more interests. Bookings for the week were in excess of 2200 tons, largely for early needs. Pig iron production declined with the blowing out of a Hamilton furnace, but one or two other stacks will be blown in soon, it is understood.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 71

Bolt, nut and rivet demand is well maintained, with January business equal to December and in some cases ahead of that month. This showing was somewhat unexpected in view of anticipatory buying the latter part of fourth quarter. A spurt in shipbuilding orders and inquiries is cheering eastern producers, while railroad prospects are better and consumption by farm equipment builders is rising slowly.

Scrap

Scrap Prices, Page 74

Pittsburgh—Coverage of recent mill purchases of No. 1 heavy melting steel at $15.25 and $15.50 has brought out broker offers of better than $15.25, and with some buying being done at $16 the market is quotable at the moment at $15.25 to $16. Consumer demand is sluggish in the wake of recent active buying, while the dealers' market is more active.

Cleveland—Shipment restrictions still continue on scrap in the Youngstown district, slightly weakening that market. Some blast furnace material has been bought for shipment to Lorain, but generally scrap transactions are few and small.

Chicago—Heavy melting steel is quieter but steady at $13.50 to $14, with brokers still paying $13.75. Lower quotations have appeared on several grades, including busheling, angle bars and springs. An anticipated rise in steelmaking this month is counted on to stimulate orders.

Boston—Mixed No. 1 and 2 cast scrap, about 2000 tons, has been recently delivered, dock, for export at $12. Outlook for boat loading, however, is less active, reflected in slightly lower prices for heavy melting steel grades. New England district prices for heavy melting steel against export orders have been slightly out of line with other points in the East and the lower quotations are partially corrective. Domestic buying is light with prices generally unchanged.

Textile cast has been delivered in New England at around $13 and a Central Massachusetts consumer pays $12 to $12.50 for No. 1 cast. Worcester pays $9, delivered, for bundled skeleton with $14 quoted for heavy melting steel, delivered, although little tonnage is currently moving at that price.

New York—Lower prices for heavy melting steel were paid by Japan in a recent purchase, estimated at 80,000 tons, most of which is expected to be shipped from the west coast. For No. 1 heavy melting, $14.75, f.a.s., is reported and about $13.50 for No. 2. Domestic shipments are light with price undertone easier. Heavy breakable cast is off 50 cents and less than $12.50 is being paid in some cases for barge delivery of heavy steel. Coatesville, Pa., is reported paying $15, delivered, for No. 1 steel.

Buffalo—Scrap is sluggish, consumers showing little interest in buying except at lower prices. However, dealers are refusing shaded bids. A more stringent embargo on shipments to one leading consumer has depressed sentiment, although rising supplies in dealer yards are not considered excessive. Heavy melting steel is unchanged. Machine shop turnings are off 25 cents.

Detroit—Little interest was shown in last week's scrap lists. Offerings were about 25 per cent smaller than in January. Borings and turnings were weaker, while bids on other items were 5 to 10 cents a ton higher. Reductions in size of lists points to lower automobile production this month.

Cincinnati—Scrap is inactive, with prices lacking strength because of lagging consumer demand. At the same time, small offerings provide a strengthening factor, and dealers are holding material in anticipation of better demand this quarter.

St. Louis—Price trends are irregular in the market here, heavy melting steel being marked down, while several grades, including sheets and some specialties, have advanced. Quotations generally are nominal, however, in the absence of representative sales. Offerings by dealers and industries are heavier.

Seattle — The export market is quiet with little new business being placed. No. 1 melting steel, which was up to $14 recently, due to sudden demand from Japan, has declined to $13 and $13.50. Dealers are paying more attention to domestic business, rolling mills buying as needs develop.

Hammond Lumber Co. is scrapping ten miles of logging railroad near Foss, Oreg., 1200 tons of rail involved.

Toronto, Ont.—Scrap is less active, and dealers have lowered their buy-

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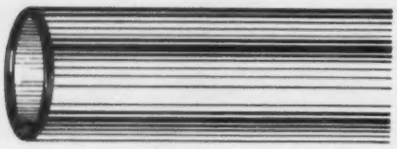

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ORDER FROM STOCK

ing prices on No. 1 heavy melting steel. Steel Co. of Canada has suspended delivery of scrap but is expected to re-enter the market within the next few weeks. This has affected shipments of turnings and bundles as well as heavy melting. Machinery cast and stove plate continue active.

Warehouse

Warehouse Prices, Page 73

Cleveland—Shipments are steady, although January volume was about 10 per cent ahead of December. Individual orders are small and well diversified among different products.

Chicago—Crippling of transportation by a blizzard last week caused shipments to be suspended or delayed for several days. Orders continue active, however, the letdown at the end of January being slight.

Boston — January warehouse volume was disappointing. While the brief trucking strike was a factor not all the blame may be traced to this.

New York — Decline in orders and tonnage during the last 10 days has slowed down warehouse activity and January volume barely attained December totals, falling slightly below with some sellers. The decline has been general as to products.

Buffalo—Last week's blizzard retarded warehouse sales and shipments, but a gain in business this month is expected.

Cincinnati—Business is retaining January gains. Demand is well distributed as to consumers, with prices steady.

St. Louis — While unfavorable weather reduced shipments lately, warehouses express satisfaction with the business volume. January sales exceeded both December and the corresponding 1938 month.

Seattle — Volume of sales is about on a par with a month ago. Buying is in small lots, with sheets still in best demand. Price is generally maintained in this area and Portland houses are still trying to stabilize. They have raised bars to 4.00c, following a cut price period when 3.50c prevailed. The Washington level is firm at 4.30c.

Semifinished

Semifinished Prices, Page 71

Pittsburgh—Demand is well sustained, with orders calling for immediate delivery and representing current needs. Sheet bars are most active, though skelp movement is fair. Consumers are stocking little or no tonnage, and demand is fluctuating widely from week to week without varying materially on the average from last quarter.

Steel in Europe

Foreign Steel Prices, Page 73

London—(*By Radio*)—Steel and iron makets of Great Britain contiuue dull for domestic and export. Deliveries of East coast hematite pig iron are improving but still are below normal. Demand for semifinished steel is expanding slowly. Production of heavy steel sections is well below capacity. Sheet mills are in best position, owing to air defense orders.

Machine toolmakers, working day and night shifts, have production booked for 30 months. A plant is being established at Stillington, Durham, for production of a refined iron for high class work. This grade has not previously been made in Great Britain.

The Continent reports business dull with Great Britain buying moderate billet tonnages. Prices generally are firm.

Berlin—It is learned in well-informed circles that proposed conversations between representatives of British and German industry will open Feb. 28 in Dusseldorf. Main discussion will be prices, with special reference to machinery and coal.

Tin Plate

Tin Plate Prices, Page 70

Tin plate production is steady at 45 per cent. The buying season on packers' cans has not yet opened, but specifications this month are expected to show a small increase over January. While general line can business still is slow, demand is tending upward. Some specifications in anticipation of the salmon pack, which is not far off, are noted. Export demand is limited, shipments being smaller than a year ago.

Ferroalloys

Ferroalloy Prices, Page 72

New York—Ferromanganese sellers look for the shorter month to curtail shipments in February. January movement was the heaviest since July. Activity in both months was influenced by price reductions. The market continues $80, duty paid, ports. Domestic spiegeleisen prices have been unchanged since last summer at $28 and $33, with shipments fairly steady the past three months.

Nonferrous Metals

New York—Recovery in nonferrous metals continued at a slow pace last week. Although improvement was spotty, outlook for the future remained fairly bullish. The outstanding development was an advance of $2 per ton in the price of lead.

Copper — Electrolytic held at 11.25c, Connecticut, in the producers' market despite the fact that resale metal was available during the week from 10.37½c to 10.50c; casting from 10.12½c to 10.20c, f.o.b. refinery; and export electrolytic from 10.00c to 10.22½c, c.i.f. Closing levels were around the highs for the week. While foreign demand continued active following January sales of about 76,000 tons, buying here remained quiet with last month's sales amounting to only 15,507 tons. The market was supported by output curtailments which are now widely in effect.

Lead—Sellers booked as much tonnage as they had available at the 4.60-cent East St. Louis level and then raised prices 10 points on the final day of January. This upward revision was made possible by higher London prices.

Zinc—Sentiment was buoyed by the steady rise in the galvanizing rate to around 57 per cent of capacity and continuation of shipments at a favorable rate. Fresh demand at the 4.50-cent East St. Louis level remained slow.

Tin—Straits spot fluctuated between 46.00c and 46.40c with buying moderate only at the lower levels. The increase of 3686 tons in world visible plus carryovers had no apparent affect on the market.

Coke Oven By-Products

Coke By-Product Prices, Page 71

New York — Demand for distillates has slackened slightly since the first of the month, January sales, notably toluol and xylol, running in excess of the previous month. Lacquer-makers contributed materially. While production has increased, little material is accumulating, production moving steadily into consuming channels. Prices are unchanged. Phenol for industrial uses is fairly active, recent buying being largely for replacement of inventories. Plastic industrial requirements have been good. Seasonal improvement in naphthalene is developing. Sulphate of ammonia demand is steady, as are shipments, with a pick-up in bag shipments expected in three to four weeks.

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound

Jan.	Electro, del. Conn.	Copper Lake, del. Midwest	Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
28	11.25	11.37½	10.05	46.00	46.00	4.75	4.60	4.50	20.00	11.25	35.00
30	11.25	11.37½	10.12½	45.95	45.95	4.75	4.60	4.50	20.00	11.25	35.00
31	11.25	11.37½	10.20	46.40	46.35	4.85	4.70	4.50	20.00	11.25	35.00
Feb.											
1	11.25	11.37½	10.20	46.37½	46.35	4.85	4.70	4.50	20.00	11.25	35.00
2	11.25	11.37½	10.20	46.05	45.95	4.85	4.70	4.50	20.00	11.25	35.00
3	11.25	11.37½	10.20	45.90	45.80	4.85	4.70	4.50	20.00	11.25	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 11.25c Conn. copper

Sheets

Yellow brass (high) 17.31
Copper, hot rolled 19.37½
Lead, cut to jobbers 8.00
Zinc, 100 lb. base 9.75

Tubes

High yellow brass 20.06
Seamless copper 19.87½

Rods

High yellow brass 12.62
Copper, hot rolled 15.87½

Anodes

Copper, untrimmed 16.62½

Wire

Yellow brass (high) 17.56

OLD METALS

Nom. Del. Buying Prices

No. 1 Composition Red Brass

New York 6.25-6.37½
Cleveland 6.50-6.75
Chicago 6.00-6.25
St. Louis 6.12½-6.37½

Heavy Copper and Wire

New York, No. 1 ..... 7.87½-8.00
Cleveland, No. 1 ..... 7.75-8.00
Chicago, No. 1 ..... 7.50-7.75
St. Louis 7.62½-7.87½

Composition Brass Borings

New York 5.40-5.65

Light Copper

New York 6.25-6.50
Cleveland 6.00-6.25
Chicago 5.87½-6.12½
St. Louis 6.12½-6.37½

Light Brass

Cleveland 3.25-3.50
Chicago 3.75-4.00
St. Louis 3.87½-4.12½

Lead

New York 4.00-4.25
Cleveland 3.50-3.75
Chicago 3.75-4.00
St. Louis 3.50-3.75

Zinc

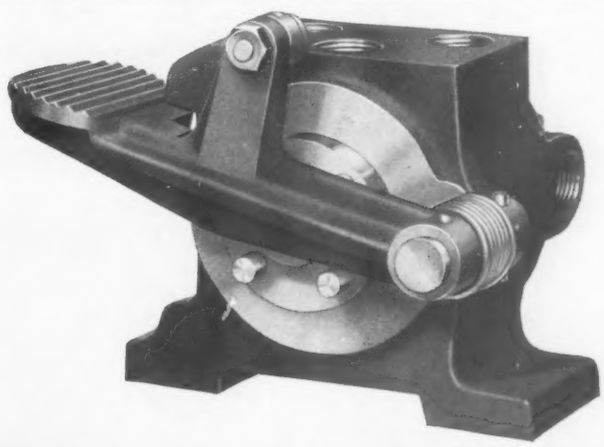
New York 2.50-2.62½
Cleveland 2.00-2.25
St. Louis 2.25-2.50

Aluminum

Borings, Cleveland 6.25-6.50
Mixed, cast, Cleveland 6.75-7.00
Clips, soft, Cleveland 14.25-14.50
Mixed cast, St. Louis 7.00-7.50

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads . 10.50
Standard No. 12 aluminum . . . 12.75-13.25



HEAVY DUTY FOOT VALVE

Rotary ratchet action of this Hannifin Air Control Valve gives simple, positive control of air operated equipment. One pressure operates the cylinder, second pressure reverses the cylinder. The dependable disc-type valve design means long life and no leakage. Since there is no packing there is no packing maintenance.

Made in 3-way and 4-way types, hand and foot operated, spring return, electric, manifold, and special models. Write for Valve Bulletin 34-S.

HANNIFIN MANUFACTURING COMPANY
621-631 South Kolmar Avenue, Chicago, Illinois

ENGINEERS • DESIGNERS • MANUFACTURERS • *Pneumatic and Hydraulic Production Tool Equipment*

HANNIFIN "Packless" AIR CONTROL VALVES

Equipment

New York—That some builders of lathes and grinding equipment have substantial backlogs is indicated by slightly lengthened deliveries. Shipment was possible on various units in two to three weeks until recently but five to six weeks is now asked. This is accounted for by additional foreign orders in several instances.

With prospective purchasers holding off, January volume with some dealers was less than expected, although active pending orders already estimated are substantial, early action being expected on a good part of this inquiry. From shipyards, aircraft and government shops some scattered business is being placed. Railroads are buying little.

One of the largest inquiries for electric overhead traveling bridge cranes to appear in a long time is that of the bureau of yards and docks, navy department, asking bids on 38 units under spec. 9111. Installations will be at the navy yards, Boston, Charleston, Brooklyn, Norfolk, Philadelphia, Puget Sound and Mare Island, estimates to go in late this month.

Capacity of these units ranges from 5 to 75-ton capacity, the inquiry being the first to include the purchase of 78 such crane units for navy yards.

Chicago—Machine tool business is well maintained. Inquiries grew decidedly heavier near the end of last week. Preliminary railroad lists have been a feature. January sales as a whole were about 15 per cent improved over December, which month generally was the best of 1938 here. February has made a good start and possibility is seen business may equal January's. Considerable work still is pending.

Boston — Improvement in domestic orders for machine tools, notably grinding equipment, is accompanied by substantial orders for export to England and Japan, although Russia is a less active buyer. Tools for foreign account are usually for aircraft construction. Single tools were booked by a Worcester district builder of grinding equipment from a maker of bottling machinery, copper and brass fabricator, an airplane builder, a can-maker and several for the Philadelphia district and from bearing interests. Inquiry is active and several large assemblers of aircraft, engine builders especially, have mapped large programs for additional equipment, depending on the government program for air defense expansion.

Construction and Enterprise

Ohio

BRYAN, O. — Village, Charles Hester, clerk, is completing plans and probably will be ready for bids about Feb. 15 on construction of a sewage disposal plant costing $155,000 and involving chemical separator, sludge digestion and trickling filters. Champe, Finkbeiner & Associates, Toledo, O., consulting engineers. (Noted Dec. 5.)

CLEVELAND—Ohio Edison Co., A. C. Blinn, president, Commonwealth & Southern affiliate, plans to expend $4,000,000 during 1939 for improvements and extensions of its generating facilities. Of this: in Youngstown district, $2,500,000; Akron, O., district, $1,000,000; and Springfield, O., district, $500,000.

HOLGATE, O.—Village, C. F. Barth, clerk, has plans in progress which will probably mature by summer for construction of a water softening and iron removal plant costing about $10,000.

JACKSON, O. — City, Walter McCoy, service director, is planning to construct a municipal electric light and power plant and probably will soon retain an engineer for a survey.

NEW PHILADELPHIA, O. — City, A. H. Williams, mayor, proposes to construct a municipal electric light and power plant and is conducting investigation. J. W. Winters, service director.

NORTH FAIRFIELD, O. — Firelands Electric Co-operative Inc. has plans to add 140 miles of lines to its rural electric service system in three counties. Cost of project estimated at $111,000.

SALEM, O. — Ohio Edison Co., Akron, O., Mr. Funk, chief engineer, has approved preliminary schedule and will soon start on detailed plans to be ready in March for additions to and remodeling of its power plant here at cost of about $30,000.

TOLEDO, O. — City, W. F. Harris, service director, is taking bids due 2 p.m., Feb. 14 on Contracts No. 3 and 4 for waterworks boiler improvements and new feed water treatment equipment, in its $9,000,000 water project. Bond or certified check 5 per cent to accompany bid. Greeley & Hansen, Toledo, consulting engineers.

Connecticut

OAKVILLE, CONN.—Autotyre Co. will soon award contract for construction of projected one-story, 61 x 200-foot brick and steel warehouse for steel storage, with traveling cranes and boiler plant. Cost estimated at more than $40,000. Fletcher-Thompson Inc., Bridgeport, Conn., architect. (Noted Jan. 9.)

Rhode Island

PROVIDENCE, R. I.—City, J. F. Collins, mayor, will accept bids soon on installing four new filters, electric controls, chemical feeding and materials handling systems in its waterworks at cost of about $600,000.

New York

KENMORE, N. Y.—City, C. F. Lane, mayor, has plans for building a water supply system costing $685,000 and including reservoir, line, filtration plant and pumping station. G. B. Gascoigne, Cleveland, consulting engineer.

KINGSTON, N. Y. — Board of public works has plans underway for constructing a sewage disposal plant costing more than $100,000. J. J. Norton, city engineer.

SYRACUSE, N. Y.—American Agricultural Chemical Co., 50 Church street, New York, plans to construct a warehouse estimated to cost in excess of $40,000.

YONKERS, N. Y. — Suchar Process Corp., 120 Wall street, New York, plans to alter and construct an addition to its processing plant at cost of about $97,500.

Pennsylvania

BUTLER, PA.—General state authority, Col. A. S. Janeway, Harrisburg, Pa., executive secretary, is receiving bids until 2 p.m., Feb. 14, on Contract No.

2 in construction of a sewage treatment plant. Involves Imhoff tanks, sludge drying beds, trickling filter with dosing tank, pumping and laboratory equipment, chlorinators and humus tank at estimated total cost of $50,000. Chester Engineers, Pittsburgh, consulting engineers. (Noted Jan. 23.)

Michigan

DETROIT—Divco Twin Truck Co. is receiving bids on construction of a one-story, 248 x 500-foot truck factory costing about $250,000, with necessary equipment. Smith, Hinchman & Grylls, Detroit, engineers.

FERNDALE, MICH. — Foster Engineering Co. has been formed with $5000 capital to manufacture machinery and industrial tools. Representative, S. A. Foster, Harrison building.

GROSSE POINTE PARK, MICH.—Honing Equipment Corp. has been incorporated with 5000 shares no par stock to deal in machinery. Joseph A. Garlin, 1220 Whittier avenue.

Illinois

CHICAGO—Bowers Battery Mfg. Co., Spring Valley, Pa., C. P. Bowers, president, has plans which will mature this year for constructing a plant costing about $40,000.

GENEVA, ILL.—Modern Steel Equipment Co. has let a general contract for one-story, 86 x 180-foot factory to C. E. Giertz & Son, Elgin, Ill. Cost estimated at $40,000.

OAK LAWN, ILL.—City proposes to build an iron removal and water softening plant to cost over $15,000. H. J. Smith, city engineer.

PERU, ILL.—City has received PWA funds and will build a primary sewage treatment plant costing $125,000. Consoer, Townsend & Quinlan, Chicago, engineers.

Alabama

SHEFFIELD, ALA.—Electro-Metallurgical Co., Niagara Falls, N. Y., soon lets a contract for constructing a one-story, 100 x 200-foot office and store house.

Delaware

MIDDLETON, DEL.—City, L. Levinson, mayor, is receiving bids on a 300-horsepower diesel engine generator unit with auxiliary equipment, costing $26,000. Albright & Friel Inc., Philadelphia, consulting engineers.

Georgia

ATLANTA, GA.—Western Electric Co., L. A. Davis, local manager, has plans to build a four-story warehouse costing $500,000. W. R. Katelle, New York, architect.

ATLANTA, GA.—National Battery Co. has let a general contract for construction of one-story, 100 x 200-foot manufacturing plant to J. W. Jenkins, 563 North avenue, Atlanta.

CARROLLTON, GA. — Carroll Electric Membership Corp., A. T. Benford, president, receives bids Feb. 7 for construction of 125 miles primary and secondary rural electric power lines in four counties. J. B. McCrary Engineering Corp., Atlanta, Ga., consultant.

CEDARTOWN, GA.—National Oil Co. has awarded contract to Wright & Lopez, Cedartown, for construction of a one-story, 60 x 100-foot brick, concrete and steel addition to its plant.

PORTERDALE, GA. — Bibb Mfg. Co. plans to construct a 100,000-square foot addition to its Osprey plant. Will install various equipment, including 250 looms.

North Carolina

SHELBY, N. C. — Cleveland Co-operative Electric association has received an REA allotment of $300,000 and will soon be ready to start construction of projected 300-mile extension of rural electric lines.

WADESBORO, N. C.—Anson Mutual Electric Corp., V. B. Blalock, president, has an REA allotment and plans to build rural electric lines costing a total of $300,000. N. B. Stonestreet, Wadesboro, consulting engineer.

Tennessee

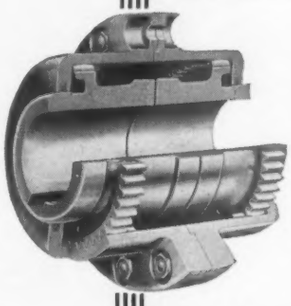
CHATTANOOGA, TENN. — Electric power board will receive bids Feb. 14 on contract No. 2-C for constructing overhead distribution lines and street lighting system at cost of $375,000. S. R. Finley, chief engineer.

Virginia

HOPEWELL, VA. — Hercules Powder

POOLE

FLEXIBLE COUPLINGS



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NO WELDED PARTS

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Industrial — Well balanced screens of excellent material and workmanship to assure maximum screen production combined with durability.

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New York Office, 114 Liberty Street

Co. Inc., Wilmington, Del., will start work immediately on construction of an ethyl cellulose plant. (Noted Nov. 14.)

Missouri

SLATER, MO. — City, T. J. Cauldin, clerk, takes bids to 10 a.m., Feb. 18, on contract No. 2, including overhead lines, cooling tower, circulating water pumps and switchboard. Burns & McDonnell Engineering Co., Kansas City, Mo., consulting engineer.

ST. LOUIS—Gaylord Container Corp., 2820 South Eleventh street, plans installation of motors and controls, conveyors and electric hoists in plant for production of paper containers. Company is remodeling 100,000 square foot group of buildings. Total cost of project estimated at more than $175,000.

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Double from $4.00

DETROIT LELAND HOTEL

CASS AT BAGLEY AVE.
GARAGE IN CONNECTION

Arkansas

CONWAY, ARK. — City council approved $77,000 bond issue to finance improvements in its waterworks. PWA has granted a $63,000 allotment. M. Z. Bair, consulting engineer.

CORNING, ARK. — Clay County Cooperative association, L. A. Schrivner, president, has been allotted $300,000 REA loan for constructing 281 miles of rural electric power lines in the county. Lund-Buxton Engineering Co., Little Rock, Ark., consulting engineers in project.

HEBER SPRINGS, ARK. — Lincoln Creosoting Co., Shreveport, La., plans to erect a creosoting plant costing $100,000 with equipment. Project includes tank house, power house and pumping plant.

ROWELL, ARK.—Lincoln County Cooperative association, W. Boyd, president, will probably receive bids this month for construction of 165 miles rural electric transmission lines in two counties. Has $75,000 REA allotment. Lund-Buxton Engineering Co., Little Rock, Ark., consultant.

Minnesota

FARMINGTON, MINN.—Dakota County Electric co-operative has awarded contract to Langford Electric Co., Minneapolis, for pole and line work in connection with construction of 147 miles of rural transmission lines. Banister Engineering Co., St. Paul, consultant.

HIBBING, MINN. — City, V. L. Cole, clerk, plans to install a turbine at the municipal power plant. Burlingame, Hitchcock & Estabrook, Minneapolis, consulting engineers.

MOORHEAD, MINN. — Red River Valley Co-operative power association is completing final plans for construction of about 200 miles of rural transmission lines serving 400 farms in three counties.

Texas

CROSBYTON, TEX.—City, C. M. Huddleston, mayor, has rejected first bids and calls for new bids Feb. 11 on electric generating plant and distribution system. Includes diesel engines and auxiliaries costing $35,000. Municipal Engineering & Finance Co., Dallas, Tex., consultant.

DAINGERFIELD, TEX.—City, Dr. C. D. Truitt, mayor, is receiving bids until Feb. 15 for construction of a water plant to cost $60,000. Charles Chappell, Pittsburg, Tex., engineer.

GROVES, TEX. — Jefferson county water control and improvement district No. 1 has an allocation of $42 599 to finance construction of a sewerage system; and has $225,000 bonds available to supplement in sewerage work and to finance construction of projected water system.

LEAGUE CITY, TEX. — City has plans in progress for constructing a water and a sanitary sewerage system. H. G. Olmstead, League City, consultant.

LUBBOCK, TEX. — City, W. H. Rodgers, manager, has voted $150,000 bond issue to finance construction of proposed sewage disposal system and treatment plant.

MARFA, TEX. — City has let contract at $60,543 to B & M Construction Co., Oklahoma City, Okla., for extensions and improvements in its waterworks. Frazer & Benner, El Paso, Tex., consulting engineers. (Noted Nov. 7.)

PORT ARTHUR, TEX. — Petroleum Iron Works, Beaumont, Tex., has acquired plant of Wilson-Bennett Mfg. Co. and will install machinery for fabricating 55-gallon steel oil drums. Capacity to be 200 drums per hour.

Kansas

HOISINGTON, KANS.—City has completed plans and will soon receive bids on power plant improvements costing $45,000 and involving installation of a 300-horsepower diesel engine, switchboard extensions and distribution line extensions. W. B. Rollins & Co., Kansas City, Mo., consulting engineer.

North Dakota

WAHPETON, N. DAK. — Otter Tail Power Co., Fergus Falls, Minn., will soon award contracts for constructing a $400,000 power plant addition involving 10,000-kilowatt turbine. (Noted Jan. 16.)

Pacific Coast

LOS ANGELES — Emsco Derrick & Equipment Co., 6811 South Alameda street, is ready to build a 45 x 80-foot addition to its factory.

LOS ANGELES — Southern California Edison Co. plans to expend $5,100,000 during the year on extending and improving its generating and distributing facilities.

LOS ANGELES — Western Iron & Metal Co., 2621 East Twenty-sixth street, has begun construction of a corrugated iron warehouse costing about $6000.

LOS ANGELES — Pacific Coast Manganese Corp. has been organized here with 100 shares capital stock. Directors are: Clyde Haws, Mabel Beeler, W. E. Lyon, Los Angeles; V. B. Whedon, Beverly Hills; and G. R. Dexter, Santa Monica, Calif.

PORTLAND, OREG. — Bonneville authority has called bids Feb. 21 for erecting 374 tall transmission towers, constructing foundations, and stringing 219 miles of steel-reinforced aluminum cable and ground wire for two 230-kilovolt single circuit lines. (Specification 139.)

CAMAS, WASH. — Crown-Zellerbach Paper Corp. plans for early construction of a modern laboratory building to house its technical departments.

COULEE CITY, WASH. — City has tentatively approved plans for constructing a municipal water system to cost $35,000. G. D. Hall, Yakima, Wash., consulting engineer.

EPHRATA, WASH. — WPA has granted $93,386 to city in the proposed construction of a sewage disposal plant and sewerage system.

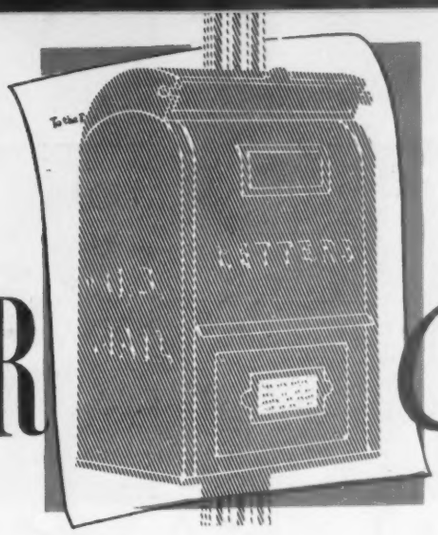
Canada

OTTAWA, ONT. — Department of national defense, director of contracts, is asking bids due Feb. 22 on 24-kilowatt diesel engine generator sets costing about $50,000. Major H. Maple, Ottawa, engineer.

MONTREAL, QUE. — Royal Typewriter Co. has awarded contract for construction of a new factory here to cost about $125,000. Work is to start April 1.

ST. JOHNS, QUE. — Richards Chemical Works Ltd. plans to extend its plant at cost of about $40,000.

READER Comments



Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Blames High Pressure Sales

To the Editor:

My idea of speculative buying is that it is not much more or less than high pressure salesmanship. In some place or other I read just recently that courtesy gives the high pressure salesman some splendid breaks. That is very true, but the breaks come entirely to the salesman, if there are any, because the fellow that is doing the speculating on his buying program is bound to pay for it.

The only salesman who brought grief to our forefathers and forefathers and their plan of buying for their daily needs was the high pressure salesman, because he was the one that used to sell them the lightning rods and sewing machines, both by the high pressure method.

You refer to the item of steel in your editorial of Jan. 30. It is a very good illustration. I have a number of times thought that a price advance in steel that was mentioned from two to six weeks before it was to take effect was nothing more than a stimulant to produce sales and that, in my estimation, comes under the head of high pressure salesmanship.

Why is it necessary to have sales representatives of the steel corporations rush around by airplane, train and automobile in advance of a price increase, notifying all customers of the fact that they are allowing them a special dispensation by advising of this increase and suggesting that they load up well by advance orders to cover them for a period of three to six months. Why not take a certain date and publish or announce one morning that a price advance was going into effect that day. I suppose someone will say: "Yes, and then you would be sore as hell about the fact that you weren't let in on it." Well, if we could ever get to the point where no one was let in on it, who would there be that would have the reason for getting peeved.

I think this type of high pressure salesmanship has a lot to do with the peaks and valleys that we have in business, and another thing I know or feel quite sure of is that you are not going to help the situation one bit by looking for government to control it. Business had better get hold of it by the back of the neck and control it itself, and then it will reap the the benefits that come from it. Otherwise government will reap a lot of benefits and we won't get any results.

A. G. HOPCRAFT

Purchasing Agent,
The Cleveland Worm & Gear Co.,
Cleveland.

Sellers Can Curb Overbuying

To the Editor:

Perhaps there is an answer to the problem presented in your editorial in STEEL, Jan. 30.

Experienced buyers are fairly well acquainted with the cost and the gamble in carrying inventories. If it is true that producers find it costly to sell far in advance of their customers' needs, the correction is certain to come.

Our surveys indicate that as a general rule purchases by industrial organizations are based on production requirements and sales schedules. The unusual labor, political and financial situations, which caused the overloading of inventories in 1937, were an exceptional condition and hardly need a special solution to prevent a repetition.

Speculative buying to secure price advantage is an entirely different animal from buying ahead to protect production requirements. Scare selling is in no small way responsible for the second situation and, if sellers will keep their customers well informed on delivery schedules and avoid rather than promote fear of shortages, the cost of carrying inventories, especially of those materials whose prices are fairly well stabilized, will remove any incentive for the buyer to load up.

We never underestimate the influence of sales presentations on the policies of the buyer and much of speculative buying, which is based on fear, could easily be removed by constructive salesmanship.

G. A. RENARD

Executive Secretary,
National Association of Purchasing Agents,
New York

Pricing Can Help Employment

To the Editor:

Your recent editorial, entitled "Speculative Buying Promotes Instability," carried a much-needed message to the steel industry. I have long felt that there is no justification for the practices of announcing price advances long before the increases are to be put into effect.

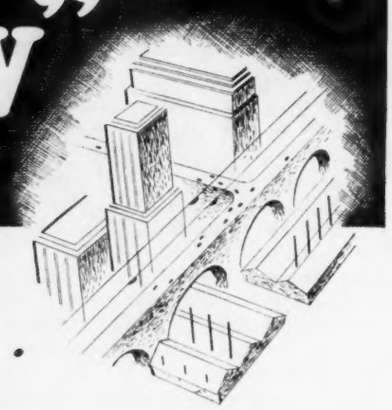
Presumably, when a price is raised there are good reasons for it in market and cost conditions. If those conditions exist when the price announcement is made the price should be advanced immediately.

I strongly agree with you that one of the great problems facing the country is the stabilization of employment and industrial operations. I am convinced that the steel industry could make at least some effective contribution to this end by a change in the present practice of price announcements.

E. J. KULAS

President,
The Otis Steel Co.,
Cleveland.

"Steels of Today and Tomorrow"



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Allegheny Metal is just one of a number of outstanding "Steels of Today and Tomorrow" in which you can always place implicit confidence!

Allegheny METAL

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- ★Ludlite
- ★Allegheny Stainless Steels
- ★Electrical Sheets
- ★Hot and Cold Rolled Sheets and Strip
- ★Steel and Alloy Castings
- ★Seamless Tubing
- ★Welded Tubes
- ★Pipes
- ★Tool Steels
- ★Forgings
- ★Nitralloy Steels
- ★Stainless Fine Wire
- ★Ball and Bearing Steels
- ★Magnet Steels
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